

Meeting of the Central Valley Flood Protection Board

March 28, 2014

Staff Report

Union Pacific Railroad Company

Yankee Slough Bridge 165.89 Replacement, Sutter County

1.0 – REQUESTED ITEM

Consider approval of a railroad bridge replacement over Yankee Slough (Attachment A) by Draft Permit No. 18906 (Attachment B).

2.0 – APPLICANT

Union Pacific Railroad Company (UPRR)

3.0 – PROJECT LOCATION

The project is located at the UPRR crossing of Yankee Slough in Sutter County, east of the Feather River and just upstream from the confluence of Yankee Slough with the Bear River (Attachment A).

4.0 – PROJECT DESCRIPTION

UPRR proposes to replace the existing 24-span, 360 foot long, Timber Stringer Trestle Ballast Deck (TST-BD) Bridge 165.89 over Yankee Slough with a 12-span, 360 foot long, Prestressed Concrete Box Girder (PCB) bridge on the same horizontal alignment as the existing bridge.

5.0 – AUTHORITY OF THE BOARD

California Water Code § 8534, 8590 – 8610.5, and 8700 – 8710

California Code of Regulations, Title 23 (Title 23):

- § 6, Need for a Permit
- § 12, Protests
- § 13, Evidentiary Hearings
- § 108, Existing Encroachments

- § 112, Streams Regulated and Nonpermissible Work Periods
- § 116, Borrow and Excavation Activities – Land and Channel
- § 120, Levees
- § 121, Erosion Control
- § 128, Bridges

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with the project are as follows:

- The U.S. Army Corps of Engineers (USACE) Sacramento District comment letter was received on March 18, 2014 for this application. The letter indicates that the USACE District Engineer has no objections to the project, subject to conditions. The letter is incorporated into the permit as Exhibit A.
- Reclamation District 1001 (RD 1001) conditionally endorsed the project on December 21, 2011 (Attachment C)
- RD 1001 overturned their previous conditional endorsement and submitted a formal protest with an attached petition from 150 landowners on February 27, 2014 (Attachment D).

7.0 – PROJECT ANALYSIS

7.1– Project Background

- December 21, 2011 RD 1001 conditionally endorsed the project. In the endorsement RD 1001 requested the Board require compliance with Title 23 and no variance to § 128(a)(16) for low chord elevation of the bridge.
- Based on receipt of environmental documentation, a revised variance request, and other supporting information received from UPRR Board staff was able to deem the application complete on November 19, 2013. The design included matching the vertical alignment of the proposed bridge with the existing bridge. This design required a variance to Title 23, § 128(a)(16) because the deck width of the improved structure was approximately seven inches greater than the existing deck width.
- Board staff received 14 landowner protests dated from February 7, 2014 to February 14, 2014.

- On February 20, 2014 UPRR submitted a redesigned project after considering the concerns of nearby landowners (Attachment E). The redesign raised the track seven inches in elevation so that the proposed low chord elevation would match that of the existing bridge (no decrease of low chord) to be compliant with Title 23, § 128(a)(16). This redesign also addresses a comment from the USACE District to include rip rap along the bridge's sloping abutments. The track raise also required an additional 1,000 feet of railroad reconstruction in both directions from the bridge as UPRR as determined by UPRR to be the maximum possible raise due to nearby infrastructure and grade constraints. This redesign was also submitted to RD 1001's District Engineer.
- Board staff received a protest from the Sutter County Board of Supervisors, dated February 26, 2014.
- Board staff received a protest from RD 1001 dated February 27, 2014 with a 150-signature petition. This protest overturned RD 1001's original conditional endorsement of the project because of concerns about improving the existing conditions.
- Board staff conducted a conference call on March 4, 2014 with UPRR staff and consultants, and RD 1001's District Engineer and Secretary / Manager to discuss the proposed redesign and the RD 1001 protest and petition. Board staff requested UPRR to provide a technical memorandum to address the issues raised by RD 1001. Board staff also requested UPRR to model specific hydraulic scenarios to provide additional insight related to bridge hydraulic impacts. RD 1001's Board meeting on March 26, 2014 was also discussed as a potential venue to discuss any new findings.
- On March 6, 2014 Board staff received a technical memorandum (Attachment F) from UPRR. The memorandum discussed the requested supporting hydraulic modeling scenarios. It also provided an explanation of project impacts that would result from a 6.5-foot track raise to achieve freeboard requirements above the design water surface elevation (WSE) as suggested in RD 1001's protest.

7.2– Hydraulic Summary

UPRR analyzed the project under four different scenarios using HEC-RAS one-dimensional hydraulic modeling software as follows:

- **Existing Condition** – current 24-span, 360 foot timber bridge
- **Proposed Design** – seven inch track raise to match existing low chord

elevation, rip rap added per USACE comment, and proposed 12-span, 360 foot concrete replacement bridge

- **RD 1001 Requested Design (based on standards for non-railroad bridges)** – 12-span, 360 foot concrete bridge designed to meet freeboard standards for roadway bridges over the design WSE, which would require a 6.5 foot track raise
- **Natural Condition** – the existing Yankee Slough channel with no bridge in the HEC-RAS model

The results of the modeling scenarios are shown in the following table:

Scenario	Low Chord Elevation (feet)	100-year WSE (feet)	Freeboard (feet)	Bridge Opening Area (square feet)	Velocity (feet/second)
Existing Condition	57.48	60.02	-2.54	4, 022	0.62
Proposed Design	57.48	60.02	-2.54	4,149	0.60
RD 1001 Protest	63.30	60.02	3.28	5,073	0.49
Natural Condition	NA	60.02	NA	NA	NA

The above table displays UPRR's HEC-RAS modeling results, and clearly shows that the WSE is not controlled by the low chord elevation of either the existing or proposed bridge designs. Results also indicate that if the bridge were completely removed, as in the natural condition, there would be no change in WSE. Note that although the proposed design results in partial submergence of the bridge by 2.54 feet, the resulting WSE measured upstream of the bridge is not affected.

Modeling results show a small decrease in velocity from the existing condition to the proposed design by 0.02 feet-per-second. This velocity magnitude of less than one foot-per-second supports the applicant's contention that erosion would not be worsened by the proposed design. Erodible velocities, by current technical standards, are typically considered to be greater than ten feet-per-second.

Based on UPRR's modeling Board staff concludes that the proposed project is expected to result in no adverse hydraulic impacts to the Sacramento River Flood Control Project (SRFCP).

7.3– Geotechnical Summary

Board staff has reviewed geotechnical information provided by UPRR and has concluded that the proposed project would result in no adverse geotechnical impacts to the SRFCP.

All fill, excavation, rip rap placement, and temporary structures will be completed in compliance with Draft Permit No. 18906 and Title 23 standards.

7.4– Specific Railroad Bridge Standard per Title 23

§ 128(a)(16) – Replacement railroad bridges must have the soffit members no lower than those of the replaced bridge, but are not required to have a specified amount of clearance above the design flood plane.

As a result of the submitted redesign (as described in Section 7.1) to address local landowner concerns the project is designed in compliance with Title 23 and will not require any variances to Board standards.

7.5–Protest Letters Received

Protest letters are included in Attachment G. The Sutter County Board of Supervisors (February 26, 2014 – Attachment H) and RD 1001 (February 27, 2016 – Attachment D) also submitted protests.

Staff has determined that all protests were submitted pursuant to Title 23, § 12 and are of a flood control nature. Collectively they describe historical high water events and adverse hydraulic impacts that the protestants believe are caused by the bridge. The suggested adverse hydraulic impacts include inundation and nearby erosion, and / or the unfair application of Board standards to railroads (Section 7.4). Since the protests were submitted in accordance with Title 23 and are of a flood control nature Board staff scheduled this application as a hearing.

Board staff has reviewed and considered all protests and all original and supplemental technical information provided by UPRR. The hydraulic analysis outlined in Section 7.2 clearly supports the UPRR finding that the soffit elevation, and the mere presence of the bridge, have no adverse impact to the WSE, nor are velocities increased which could lead to localized erosion. Based on a thorough review of all information submitted by UPRR and the opinions of the protestants, staff has determined that this area's historical flood concerns exist independently from this project and are not worsened by its completion.

8.0 – CEQA ANALYSIS

Board staff has prepared the following California Environmental Quality Act (CEQA) determination:

The Board determined that the proposed action is statutorily exempt under the

provisions of CEQA and the State CEQA Guidelines. The overall activities involve issuing a permit for replacement of an existing railroad bridge under a Statutory Exemption (Public Resources Code § 21080(b)(10); CEQA Guidelines Section 15275 (a)) covering the institution or increase of passenger or commuter service on rail lines, including modernization of existing stations and parking facilities.

9.0 – CALIFORNIA WATER CODE § 8610.5 CONSIDERATIONS

- Evidence that the Board admits into its record from any party, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:

The Board has considered all the evidence presented in this matter, including the applications for Permit No. 18906, all supporting hydraulics and other technical documentation provided by UPRR, and protest letters received.

- The best available science that related to the scientific issues presented by the executive officer, legal counsel, the Department or other parties that raise credible scientific issues.

In making its findings, the Board has used the best available science relating to the issues presented by all parties. On the important issue of hydraulic impacts UPRR used the HEC-RAS one-dimensional flow model. The model is considered by many experts as the best available scientific tool for the purpose of modeling river hydraulics for this region.

- Effects of the decision on the facilities of the State Plan of Flood Control, and consistency of the proposed project with the Central Valley Flood Protection Plan as adopted by Board Resolution 2012-25 on June 29, 2012:

This project has no adverse effect on facilities of the State Plan of Flood Control and is consistent with the adopted 2012 Central Valley Flood Protection Plan and current Title 23 standards because there is no increase in water surface elevation or velocities anticipated for the proposed project.

- Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

UPRR has reviewed current literature, hydraulic studies for the Sacramento River Flood Control Project (USACE Operation and Maintenance Manual, USACE HEC-HMS rainfall-runoff model, and Sutter County's Flood Insurance Study), and researched any approved projects in the vicinity of the proposed

project. UPRR has determined that they do not anticipate any future projects that would impact the bridge replacement.

10.0 – STAFF RECOMMENDATION

Board staff recommends that the Board:

- adopt the CEQA findings;
- approve Draft Encroachment Permit No. 18906 (in substantially the form provided); and,
- direct the Executive officer to take the necessary actions to execute the permit and file a Notice of Exemption pursuant to CEQA with the State Clearinghouse.

11.0 – LIST OF ATTACHMENTS

A – Project Vicinity and Location Maps

B – Draft Permit No. 18906

Exhibit A – USACE Comment Letter (dated March 18, 2014)

C – RD 1001 Conditional Endorsement (dated December 21, 2011)

D – RD 1001 Formal Protest and Petition (dated February 27, 2014)

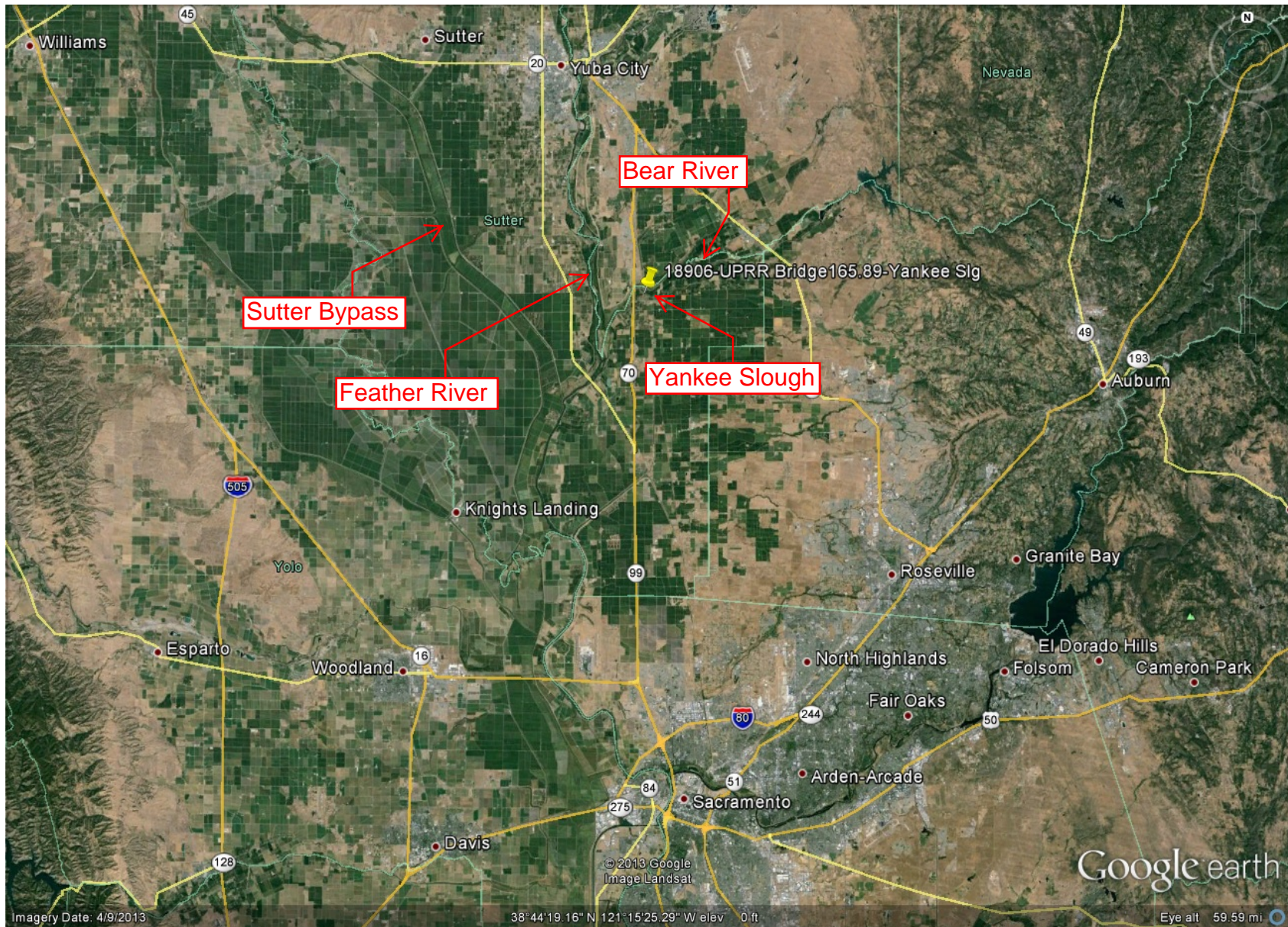
E – UPRR Redesign for Track Raise and Rip Rap (dated February 20, 2014)

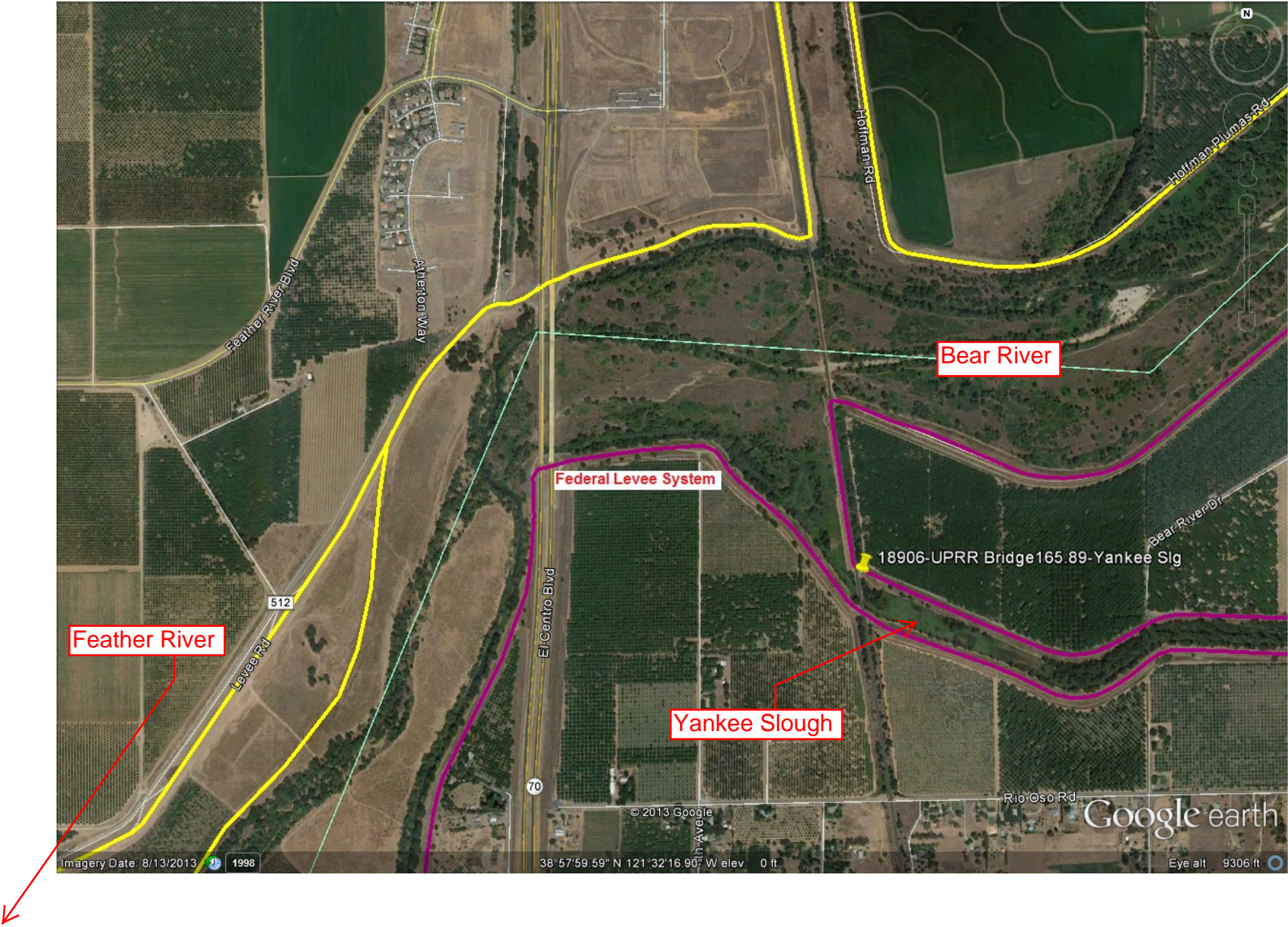
F – UPRR Technical Memorandum (dated March 6, 2014)

G – Landowner Protests (14 in total)

H – Sutter County Board of Supervisors' Protest (dated February 26, 2014)

Prepared by:	Nancy C. Moricz, Senior Engineer, Projects and Environmental Branch
Hydraulics Review:	Sungho Lee, Engineer, Water Resources, Projects Section
Document Review:	Eric Butler, Projects and Environmental Branch Chief
	Len Marino, Chief Engineer
Legal Review	Leslie Gallagher, Chief Counsel





DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY
THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18906 BD

This Permit is issued to:

Union Pacific Railroad Company
1400 Douglas Street
STOP 0910
Omaha, Nebraska 68179-0002

To replace the existing 24-span, 360 foot long, Timber Stringer Trestle Ballast Deck (TST-BD) Bridge 165.89 over Yankee Slough with a 12-span, 360 foot long, Prestressed Concrete Box Girder (PCB) bridge on same horizontal alignment as the existing bridge.

The proposed project is located on the left bank of Yankee Slough at River Mile 0.8 (Corps), and is 0.5 miles east of Highway 70 (Section NE 1/4 OF SECT. 21, T13N, R4E, MDB&M, Reclamation District 1001, Yankee Slough, Sutter County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

Dated: _____

Executive Officer

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the

permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18906 BD

THIRTEEN: All work completed under this permit, as directed by the general and special conditions herein, shall be accomplished to ensure that the work is not injurious to adopted plans of flood control, regulated streams, and designated floodways under Board jurisdiction, as defined in California Code of Regulations, Title 23. This permit only applies to the completion of work in the project description located within, or adjacent to and having bearing on Board jurisdiction, and which directly or indirectly affects the Board's jurisdiction. This special condition shall apply to all subsequent conditions herein.

LIABILITY AND INDEMNIFICATION

FOURTEEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the Central Valley Flood Protection Board, the Department of Water Resources, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, arising out of failure on the permittee's part to perform the obligations under this permit, the permittee shall defend and shall hold each of them harmless from each claim. This condition shall supersede condition TEN.

FIFTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board, the Department of Water Resources, and their respective officers, agents, employees, successors and assigns, safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The Central Valley Flood Control Board and the

Department of Water Resources expressly reserve the right to supplement or take over their defense, in their sole discretion.

SIXTEEN: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board, the Department of Water Resources, and their respective officers, agents, employees, successors and assigns, safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The Central Valley Flood Control Board and the Department of Water Resources expressly reserve the right to supplement or take over their defense, in their sole discretion.

SEVENTEEN: The Central Valley Flood Protection Board, Department of Water Resources, and Reclamation District 1001 shall not be held liable for damages to the permitted encroachment(s) resulting from releases of water from reservoirs, flood fight, operation, maintenance, inspection, or emergency repair.

BOARD CONTACTS

EIGHTEEN: The permittee shall contact the Board by telephone at (916) 574-0609, and the Board's Construction Supervisor at (916) 651-1299 to schedule a preconstruction conference. Failure to do so at least 20 working days prior to start of work may result in delay of the project.

PERMITTING AND AGENCY CONDITIONS

NINETEEN: The permittee shall comply with all conditions set forth in the letter from the U.S. Army Corps of Engineers District Engineer dated March 18, 2014, which is attached to this permit as Exhibit A and is incorporated by reference.

TWENTY: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

TWENTY-ONE: The permittee agrees to incur all costs for compliance with local, State, and federal permitting and resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations they administer and enforce.

TWENTY-TWO: If the permittee does not comply with the conditions of this permit and enforcement by the Board is required, the permittee shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees.

PRE-CONSTRUCTION

TWENTY-THREE: The permittee shall provide construction supervision and inspection services acceptable to the Board.

TWENTY-FOUR: Prior to commencement of work, the permittee shall create a photo record, including associated descriptions of project conditions. The photo record shall be submitted to the

Central Valley Flood Protection Board within thirty (30) calendar days of beginning the project.

TWENTY-FIVE: No construction work of any kind shall be done during the flood season from November 1st to April 15th without prior approval of the Central Valley Flood Protection Board.

TWENTY-SIX: Thirty (30) calendar days prior to the start of any demolition and / or construction activities within the floodway or within the existing levee prism, the permittee shall submit to the Board's Chief Engineer two sets of detailed plans and specifications and supporting geotechnical and / or hydraulic impact analyses, for any and all temporary, in channel, or levee prism work that may have an impact during the flood season from November 1 through April 15. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or the local maintaining agency when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) working days.

CONSTRUCTION

TWENTY-SEVEN: All work approved by this permit shall be in accordance with the submitted drawings and specifications except as modified by special permit conditions herein. No work, other than that approved by this permit, shall be done in the project area without prior approval of the Central Valley Flood Protection Board.

TWENTY-EIGHT: All addenda and contract change orders made to the approved plans and / or specifications by the permittee after Board approval of this permit shall be submitted to the Board's Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include all supplemental plans, specifications, and necessary supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Board shall acknowledge receipt of the addendum or change submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agencies when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed forty five (45) calendar days. Upon approval of submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

TWENTY-NINE: The stability of the levee shall be maintained at all times during construction.

THIRTY: All debris generated by this project shall be disposed outside of Yankee Slough.

THIRTY-ONE: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to April 15.

THIRTY-TWO: The soffit of the bridges shall be no lower than that of the existing bridges.

THIRTY-THREE: Revetment shall be uniformly placed and properly transitioned into the bank, levee slope, or adjacent revetment and in a manner which avoids segregation.

THIRTY-FOUR: All revetment on the waterside of the levee or stream bank shall be quarry stone and shall meet the design and grading requirements, as specified, in Title 23, Section 121.

THIRTY-FIVE: The revetment shall not contain any reinforcing steel, floatable, or objectionable material. Asphalt or other petroleum-based products may not be used as fill or erosion protection on the levee section or within the floodway.

THIRTY-SIX: The abandoned or dismantled bridge shall be completely removed and disposed of outside the limits of the levee section and floodway.

THIRTY-SEVEN: The method and schedule of removing the bridge shall be approved by the Central Valley Flood Protection Board prior to start of work.

THIRTY-EIGHT: Piers, bents, and abutments being dismantled shall be removed to at least one (1) foot below the natural ground line and at least three (3) feet below the bottom of the low-water channel.

THIRTY-NINE: Backfill material for excavations within the levee section and within 10 feet of bridge supports within the floodway shall be placed in 4- to 6-inch layers and compacted to a minimum of 90 percent relative compaction per ASTM Method D1557-91 and above optimum moisture content or as directed in the U.S. Army Corps of Engineers' letter from their District Engineer (Exhibit A).

FORTY: Fill on the levee slopes shall be keyed into the existing levee section with each lift or as specified in the approved contract plans and specifications.

FORTY-ONE: The fill surface areas shall be graded to direct drainage away from the toe of the levee.

FORTY-TWO: Density tests by a certified materials laboratory will be required to verify compaction of backfill within Yankee Slough.

FORTY-THREE: In the event existing revetment on levee is disturbed or displaced, it shall be restored to its original condition or brought to a higher standard, to the satisfaction of Board staff, upon completion of the proposed work.

FORTY-FOUR: Except with respect to the activities expressly allowed under this permit, the work area shall be restored to the condition that existed prior to start of work.

FORTY-FIVE: The permittee shall be responsible for all damages due to settlement, consolidation, or heave from any construction-induced activities.

FORTY-SIX: Any damage to the levee crown roadway or access ramps that will be utilized for access for this project shall be promptly repaired to the condition that existed prior to this project.

VEGETATION / ENVIRONMENTAL MITIGATION

FORTY-SEVEN: Fill placed at slopes greater than two (2) horizontal to one (1) vertical without levee slope revetment shall be seeded with a native grass mix to reduce the risk of erosion.

FORTY-EIGHT: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1

to April 15.

FORTY-NINE: In the event that levee or bank erosion injurious to facilities of the State Plan of Flood Control occurs at or adjacent to and as a result of the project, the permittee shall repair the eroded area and propose measures, to be approved by the Board, to prevent further erosion.

POST-CONSTRUCTION

FIFTY: The permittee shall be responsible for repair of any damages to Yankee Slough due to construction, operation, or maintenance of the proposed project.

FIFTY-ONE: Within 120 days of completion of the project, the permittee shall submit to the Central Valley Flood Protection Board as-built drawings and a certification report, stamped and signed by a professional engineer registered in the State of California, certifying the work was performed and inspected in accordance with the Central Valley Flood Protection Board permit conditions and submitted drawings and specifications.

OPERATIONS AND MAINTENANCE

FIFTY-TWO: The permittee shall maintain the permitted encroachment(s) and the project works within the utilized area in the manner required and as requested by the authorized representative of the Central Valley Flood Protection Board, Department of Water Resources, or any other agency responsible for maintenance.

FIFTY-THREE: If the bridge is damaged to the extent that it may impair the channel or floodway capacity, it shall be repaired or removed prior to the next flood season.

FIFTY-FOUR: Drainage from the bridge or highway shall not be discharged directly into Yankee Slough without proper erosion control measures in-place.

FIFTY-FIVE: If the permitted structure results in any adverse hydraulic impact or scouring the permittee shall provide appropriate mitigation measures subject to review and approval of the Central Valley Flood Protection Board.

FIFTY-SIX: All debris that may accumulate around the bridge piers and abutments within Yankee Slough shall be completely removed from the floodway following each flood season.

FIFTY-SEVEN: The permitted encroachment(s) shall not interfere with the flood conveyance capability of Yankee Slough. If the permitted encroachment(s) are determined by any agency responsible for operation or maintenance of the flood control project to interfere, the permittee shall be required, at permittee's cost and expense, to modify or remove the permitted encroachment(s) under direction of the Central Valley Flood Protection Board or Department of Water Resources. If the permittee does not comply, the Central Valley Flood Protection Board may modify or remove the encroachment(s) at the permittee's expense.

PROJECT ABANDONMENT, CHANGE IN PLAN OF FLOOD CONTROL

FIFTY-EIGHT: If the project, or any portion thereof, is to be abandoned in the future, the permittee

shall abandon the project under direction of the Central Valley Flood Protection Board and Department of Water Resources, at the permittee's cost and expense.

FIFTY-NINE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted project works if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with implementation of the Central Valley Flood Protection Plan or other future flood control plan or project, or if damaged by any cause. If the permittee does not comply, the Board may perform this work at the permittee's expense.

END OF CONDITIONS



DEPARTMENT OF THE ARMY
U.S. Army Engineer District, Sacramento
Corps of Engineers
1325 J Street
Sacramento, California 95814-2922

REPLY TO
ATTENTION OF

Flood Protection and Navigation Section (18906)

MAR 18 2014

Mr. Jay Punia, Executive Officer
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

Dear Mr. Punia:

We have reviewed a permit application by Union Pacific Railroad (UPRR) (application number 18906). This project includes replacing the existing UPRR Bridge 165.89 over Yankee Slough with a 12 span, 360 feet long pre-stressed concrete box girder (PCB) bridge. The project is located across Yankee Slough, 0.5 miles east of Highway 70, at 38.965830°N 121.533610°W NAD83, Sutter County, California.

The District Engineer has no objection to approval of this application by your Board from a flood control standpoint, subject to the following conditions:

- a. That no work shall be performed and no stockpiles of material or equipment shall remain in the channel during the flood season of November 1 to April 15, unless otherwise approved in writing by your Board.
- b. That in the event trees and brush are cleared, they shall be properly disposed of by either complete burning or complete removal outside the limits of the project right-of-way.
- c. That in the event erosion occurs at the site, the eroded areas shall be repaired and bank protection shall be placed to prevent future erosion.
- d. That the proposed work shall not reduce the channel flow capacity or change the channel flow in such a way that may cause damage to the existing embankment.
- e. That the proposed work shall not interfere with the integrity or hydraulic capacity of the flood risk reduction project; easement access; or maintenance, inspection, and flood fighting procedures.
- f. That the drainage from the proposed bridge shall not be directed to flow water on the levees without adequate protection from erosion.

-2-

g. That the existing bridge shall be completely removed from the project right-of-way.

h. That H piles shall not be allowed within the levee embankment and upper impermeable soil layer of the levee foundation. Cast in drilled hole piles may be installed to the bottom of the upper impervious soil layer and H-piles may be driven from there, down to the design depth.

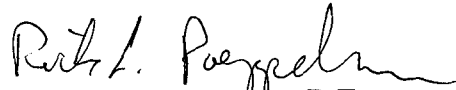
i. That the levee restoration after the construction of the concrete abutment shall be with material removed from the levee compacted to 95% of the maximum density at a moisture content between -2% and +3% of the optimum moisture content obtained by the Proctor test conforming to ASTM D 698.

j. That the levee embankment under the bridge shall be protected with adequate stone protection.

A file (SPK-2011-00051) has been opened because a Section 404 permit may be required. Please advise the applicant to contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Division, 1325 J Street, Room 1350, Sacramento, California 95814, telephone (916) 557-5250.

A copy of this letter is being furnished to Mr. Don Rasmussen, Chief Flood Project Integrity and Inspection Branch, 3310 El Camino Avenue, Suite 200, Sacramento, CA, 95821.

Sincerely,

A handwritten signature in black ink, appearing to read "Rick L. Poepelman", with a stylized flourish at the end.

Rick L. Poepelman, P.E.
Chief, Engineering Division



TRUSTEES
ROBERT SCHEIBER
ROY C. OSTERLI II
JAMES HUDSON
ERIC ROLUFS
JOHN TARESH

OFFICE OF

OFFICERS
ROBERT SCHEIBER, PRESIDENT
ROY C. OSTERLI II, VICE PRESIDENT
DIANE FALES, SECRETARY/ MANAGER

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FAX 530 656-2165
EMAIL: rd1001@syix.com

December 21, 2011

Branden Strahm, P.E., CFM
Olsson Associates
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608

Subject: Conditional Endorsement - Bridge 165.89 – Sacramento Subdivision (Yankee Slough), OA Project No. 008-2021

Dear Mr. Strahm:

This letter is in response to your request for an endorsement by Reclamation District 1001 of the subject application to the Central Valley Flood Protection Board. Per your application, UPRR proposes to replace Bridge 165.89, Sacramento Subdivision, where it crosses Yankee Slough near Trowbridge, California. Reclamation District 1001 is the local maintaining agency for flood control facilities of the State-Federal Sacramento River Flood Control Project (SRFCP) including both levees of Yankee Slough for which your project impacts.

After initial review of your application, Reclamation District 1001 endorses your application with the following conditions:

1. Full and complete review by the Central Valley Flood Protection Board to ensure compliance with Title 23 California Code Regulations, Section 128.Bridges. Most notably, Reclamation District 1001 has specific concern regarding the lowest chord elevation of the proposed bridge. The 1957 design water surface at this location is approximately 60.5 feet which results in the proposed bridge 3.62 feet lower than the

Branden Strahm
Bridge 165.89 – Sacramento Subdivision

December 21, 2011
Page 2

design water surface and 3.13 feet lower than the 100-year water surface. Additionally, the proposed lowest chord is 0.60 feet lower than the existing bridge lowest chord.

2. Full and complete review of the application by the Central Valley Flood Protection Board to ensure that there is no net increases in the 1957 design water surface elevation upstream of the proposed bridge. Any upstream impacts will require adequate mitigation to maintain the design freeboard and avoid levee overtopping during a design flood event.

If you have any questions or concerns regarding this matter, please do not hesitate to contact our projects manager, Tom Engler, with MBK Engineers at (916) 456-4400.

Respectfully,



Diane Fales, Manager
Reclamation District 1001

Cc: David R. Williams, Central Valley Flood Protection Board
Tom Engler, MBK Engineers

TRUSTEES
ROBERT SCHEIBER
JAMES HUDSON
ERIC ROLUFS
JOHN TARESH
MICHAEL DADDOW

OFFICE OF

BOARD OF TRUSTEES
RECLAMATION DISTRICT 1001
1959 CORNELIUS AVENUE
RIOOSO, CALIFORNIA 95674
530 656-2318 or 530 633-2586
FAX 530 656-2165
EMAIL: rd1001@syix.com

Attachment D - RD 1001 Protest and Petition
OFFICERS
ROBERT SCHEIBER, PRESIDENT
JAMES HUDSON, VICE PRESIDENT
ANDREW STRESSER, SECRETARY/ MANAGER

February 27, 2014

Sungho Lee, Ph.D.
Engineer, W.R., STATE OF CALIFORNIA
Central Valley Flood Protection Board
3310 El Camino Ave., Room 151
Sacramento, CA 95821

Subject: **Application 18906 BD - Bridge 165.89: Sacramento (Bear River / Yankee Slough)
– Sutter County**

Dear Sungho:

The above referenced project applied for an encroachment permit through the Central Valley Flood Protection Board (CVFPB). As the local maintaining agency for the affected Project levees, Reclamation District (RD) 1001 provided a Conditional Endorsement for the project in December 2012 which raised concerns regarding impacts from the lowest chord elevation of the proposed bridge. Although the applicant has made revisions to the project to maintain the existing lowest chord elevation, there are still concerns with the existing condition that should be corrected. RD 1001 has received the attached petition from affected property owners in the District expressing concerns with the bridge that have resulted in past overtopping and erosion at this location. . As a result, RD 1001 formally protests the permit for Application 18906 BD until a new scope and design can be submitted that either brings the bridge up to current design standards with the lowest chord above the Project Design Water Surface elevation or mitigates the impacts of the non-compliant encroachment to the satisfaction of all the parties involved. Reclamation District 1001, on behalf of the assessment payers and/or property owners located within or adjacent to the District boundaries, hereby submits the signed petition (attached). The petition includes 150 signatures from individuals directly impacted by the bridge replacement.

Reclamation District 1001 would be happy to meet with you to discuss further. Please do not hesitate to contact me with any questions.

Respectfully,



Andrew Stresser
Secretary/Manager

Enclosure

CC: Congressman Doug LaMalfa
Congressman John Garamendi
Assemblyman Dan Logue
State Senator Jim Nielsen

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

Attachment D - RD 1001 Protest and Petition

We, the property owners and assessment payers located within Reclamation District 1001 jurisdiction wish to protest Conditional Endorsement – Bridge 165.89 – Sacramento Subdivision, (Yankee Slough) OA Project No. 008-2021

Property owners and assessment payers below have expressed specific concerns regarding the lowest chord elevation of the proposed bridge. The 1957 design water surface at this location is approximately 60.5 feet which results in the proposed bridge 3.62 feet lower than the design water surface and 3.13 feet lower than the 100-year water surface. The proposed lowest chord is 0.60 feet lower than the existing bridge lowest chord. Additionally, there is a critical erosion site identified immediately up stream of the bridge, Yankee Slough briefly overtopped in 1997. Lowering the chord will exacerbate problems such as these and, therefore, should not be allowed without mitigating the erosion and overtopping concerns.

Name	Date	Residence
Shirley Liment	2/13/14	1861 Stripplin Rd Nicolaus
Albert Liment	2/13/14	" " " "
Valden Becker	2/13/14	2322 Grandview Hwy Nicolaus
Wendy Schuber	2/13/14	6522 Yarnon Rd Nicolaus
Judy Schuchler	2/13/14	1510 W Collier - RD
Edna M. St	2/13/14	2728 Housley Rd Pleas. Grove CA 95961
Jean Truette	2/14/14	999 Pacific Ave, Rio Oso CA 95674
Martin Brown	2/14/14	230 Oakhill Way, CA 95603
Dolly Barker	2/14/14	837 Pacific Ave. CA 9561
R. W.	2/15/14	849 Pacific Ave Rio Oso
Maryann White	2/15/14	849 Pacific Ave Rio Oso CA 95674
Lill D. Hargis	2/15/14	2630 Rio Oso Rd, Rio Oso CA 95674
Joseph C. Calhoun	2-15-14	2299 Rio Oso Rd Rio Oso CA 95674
B. M.	2-15-2014	2299-b Rio Oso Rd Rio Oso CA 95674
[Signature]	2/17/14	2319 Rio Oso Rd Rio Oso CA 95674

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

Attachment D - RD 1001 Protest and Petition

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Name	Date	Residence
Vera L. Smith	2/3/2014	644 4th Ave Rio Oso CA 95674
Keith C. Smith	2/3/2014	644 4TH AVE RIO OSO, CA 95674
Mary Ann Ford	2/3/2014	2121 Rio Oso Rd Rio Oso 95674
Debra Ewart	2/3/2014	2457 Rio Oso Rd 95674
Gay Harrington	2/3/2014	1049 Tiburon Way Plumas CA 95964
Beverly High	2/3/2014	830 Pacific Ave, Rio Oso 95674
Martha Blattman	2-3-2014	2641 Kempton Rd Rio Oso 95674
Rich A. Hearn	02/03/14	939 4th Ave Rio Oso 95674
Lucy L. Smith	2-3-2014	938 4th Ave Rio Oso 95674
Marnie & Sally KofKares	2-03-2014	1830 Berry Rd. Rio Oso
Walter A. Albert	2/03/14	1433 Berry Rd. Rio Oso
Robert P. Hearn	2/3/14	1644 Berry Rd Rio Oso
Mr. Paul	2/3/14	917 4th Ave, Rio Oso, CA
Lance A. Mair	2/4/14	2425 Rio Oso Rd, Rio Oso CA
Justin A. Mair	2-4-14	2425 Rio Oso Rd, Rio Oso CA

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

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Name	Date	Residence
Deann Middleton	2/4/2014	3620 Gallagher Rd, Rio Oso
Sandra Derby	2/4/2014	94216 Seaview Ln Gold Beach
Dean Heger	2/4/2014	PO Box 1 Rio Oso CA 95671
Kulaj S Thro	2/4/2014	1130 4th AVE Rio Oso CA 95674
cearence schwall	2/4/14	1843 BERRY RD RIO OSO CA
Yvonne Pina	2/4/2014	PO Box 25 Rio Oso, CA 95674
PAV MECKLENBURG	2/4/2014	3620 GALLAGHER Rd Rio Oso CA 95674
Robert R. Derby	2/4/2014	94216 SEAVIEW, GOLD BEACH, CA 97444
Ang W. Hudson	2/4/2014	4032 Bear River Dr. Rio Oso CA
William Hudson	2-4-2014	241 HUDSON Rd Rio Oso CA 95674
Lynda L Hudson	4 th Feb 2014	241 HUDSON Rd Rio Oso
Linda S Harper	2-4-14	3990 Bear River Rd Rio Oso
Carl A. Harper	2-4-14	3990 Bear River Dr Rio Oso
Julian H. Harper	2-4-14	3874 Bear River Dr Rio Oso
Louie Albert	2-4-14	1357 BERRY RD, Rio Oso

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

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Lowering the chord will exacerbate problems such as these and, therefore, should not be allowed without mitigating the erosion and overtopping concerns.

Name	Date	Residence
Nancy I. Bolger	2/4/2014	3874 Bear River Dr., Rio Oso, CA 95714
Robert B. Gallagher	2/4/2014	3999 Bear River Drive Rio Oso, CA 95714
Jim Galt	2/4/2014	1998 Pleasant Grove Rd. Rio Oso, CA 95714
Steven Hunsy	2/4/2014	3765A Gallagher Rd Rio Oso, CA 95714
John W. Ventus	2/4/2014	3179 Bear River Dr Rio Oso CA 95714
Myrna Vickers	2/5/2014	3179 Bear River Dr. Rio Oso, CA 95714
Robert McValentine	2/5/2014	2641 Kempton Rd Rio Oso, CA 95714
Malcolm Regis Jr	2/5/2014	3259 Michel Rd Nicolas, CA 95714
David J. Lee	2-5-14	1141 Lee Rd Nicolas, CA 95714
Michelle Lee	2/5/14	1141 Lee Rd. Nicolas, CA 95714
Henry Ochlepe	2/5/14	4985 Bear River
STEVE WILLEY	2/5/14	2427 SCHEIBER RD NICOLAUS
Citrus	2/5/14	6920 Rancho of Newcastle CA 95714
Brett Schreiber	2-5-2014	889A GARAGE Hwy Yuba City
Mary Hanson	2-5-2014	380 Sutter Rd.

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

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Name	Date	Residence
411 Greene St Rio Oso	2/5/14	831 Greene St Rio Oso
David Adams	2/5/14	541 Pleasant Grove Rd Rio Oso
Vivian A Davis	2/5/14	788 Greene St Rio Oso
Beford D. DAVIS	2/5/14	788 Greene St Rio Oso
411 Greene St Rio Oso	2-5-2014	831 Greene St Rio Oso
3120 Bear River Dr. Rio Oso	2-5-2014	3120 Bear River Dr. Rio Oso
Sandra DeValentin	2-5-2014	3120 Bear River Dr. Rio Oso
Jantha DeValter	2-5-2014	3170 Bear River Dr. Rio Oso
Sharon Almond	2-5-2014	247 Pleasant Grove Rd. Rio Oso
Elizabeth Nelson	2-5-2014	4615 Bear River Dr. Rio Oso
Eric Nelson	2-5-2014	4615 Bear River Dr. Rio Oso
Debra Nelson	2/5/14	4615 Bear River Dr. Rio Oso
Debra Nelson	2/5/2014	917 4th Ave Rio Oso
Ivins Harold	2-6-14	2670 Rio Oso Rd 95674
Christie Hall	2-6-14	1951 Perry Ct. Rio Oso. Ca

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

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Lowering the chord will exacerbate problems such as these and, therefore, should not be allowed without mitigating the erosion and overtopping concerns.

Name	Date	Residence
Melene Bell	2-6-14	1951 Berry Rd. Rio Oso
Charles L. Gifford	2-6-14	1865 BEARY Rd, Rio Oso CA 95674
Bill Bell	2/6/14	771A El Centro Blvd Rio Oso 95672
Bill Bell	2/6/14	Same
Robbin Peterson	2/6/14	870 PACIFIC AVE 95674
Greg D. Nunn	2/6/14	2395 Row. OSO SANIT
Cindy Jones	2/6/14	2395 RIO OSO RD Rio Oso
Paul Frank	2/6/14	18247 Indian Springs Rd Parkview 9591
Ann S. Grant	2-06-14	3558 Bear River Dr Rio Oso
Dog Reno	2-06-14	3338 Bear River Dr 95674
Matthew R. Lee	2-06-14	3558 Bear River Dr Rio Oso 95674
Anne Conant	2-06-14	3688 Bear River Dr Rio Oso 95674
Chris Jones	2-6-2014	390 PLEASANT GROVE RD
RM Callen	2-6-14	3692 GALLAGHER RD

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

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Name	Date	Residence
Jennifer Adams	2/6/14	541 Pleasant Grove
Robert D. Norene	2/7/14	3600 Gallagher Rd
John Cohen	2/7/14	1822 Lewis Rd
Damon Stokes	2/7/14	3366 BEAR RIVER DR.
Willie Pol St	2/7/14	4749 Bear River Dr.
James Sule	2/7/14	3302 Bear River Dr.
OWBEN	2/07/2014	3302 Bear River Drive
Brandon Van Dyke	2/7/2014	2724 Bear Rd. Rio Oso BVP 2/14
Bill Brewer	2/7/14	2688 Rio Oso Rd. Rio Oso
Mary Brewer	2/7/14	2688 Rio Oso Rd. Rio Oso
James Sule	2/9/14	2151 Wilcox Ranch Rd. Plumas Lake
Langk Singh Santhos	2/9/14	1191 Calypso Ranch Dr. Plumas Lake
W. A. H.	2/9/14	10093 CRISTO DR.
Shawn	2/9/14	Same ↑ Sacramento, CA 95822
John F. Zuber	2/9/14	P.O. Box 6, Rio Oso, CA

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

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Name	Date	Residence
Mike Campouris	2-10-14	1621 Cramer rd. Rio Oso Ca.
Surjit S. Rahul	2-10-14	1877 BR Holeley Rd. Y.C. 95993
Jackie Br. Boisa	2-10-14	2121 Rio Oso Rd. Rio Oso Ca. 95674
Billie Single	2-10-14	3768 Gallagher Rd. Rio Oso Ca. 95675
Terry Single	2-10-14	3760 Gallagher Rd. Rio Oso Ca. 95674
Jeffrey W. Dunbar	2/10/14	3334 Bear River Dr. Rio Oso
Cara Nelson	2/11/14	3126 Betsy Rd. Rio Oso Ca. 95674
Richard R. Nelson	2/11/14	3126 Betsy Rd. Rio Oso Ca. 95674
Darrell Jansen	2/11/14	2758 Rio Oso Rd. Rio Oso Ca. 95674
Condice Galt	2/11/14	2475 Rio Oso Rd. Rio Oso Ca. 95674
Walter Galt	02/11/14	2439 Rio Oso Rd. Rio Oso Ca. 95674
Melanie Galt	02/11/14	2303 Rio Oso Rd. Rio Oso Ca. 95674
Glenn Galt	2/11/14	2303 Rio Oso Rd. Rio Oso Ca. 95674
Ann Galt	2/11/2014	2171 Rio Oso Rd. Rio Oso Ca. 95674

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

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Name	Date	Residence
[Signature]	2/11/14	2439 Rio Oso Road Rio Oso CA 95674
Michael [Signature]	2/11/14	2409 Rio Oso Rd Rio Oso CA 95674
2 Rnodes	2/11/14	2409 Rio Oso Rd Rio Oso CA 95674
Ron Rafter	2/12/14	90B-62-Rio-Oso
Sturley Rafter	2/11/14	60B-62-Rio-Oso
Wanland [Signature]	2/11/14	753 El Centro Way Rio Oso, CA
Jain Rains	2/12/14	772 4th Ave. Rio Oso, CA 95674
[Signature]	2/12/14	2357 Rio Oso Rd Rio Oso, CA 95674
[Signature]	2/12/14	2357 Rio Oso Rd Rio Oso, CA 95674
Shirley Leach	2/12/14	2299A Rio Oso Rd. Rio Oso, CA 95674
Bernard Leach	2/12/14	2299A Rio Oso Rd Rio Oso, CA 95674
Donald White	2/13/14	575 Pacific Ave Rio Oso, CA 95674
Mona A. White	2/13/14	875 Pacific Avenue Rio Oso, CA 95674
[Signature]	2/13/14	1586 MARCUM RD NICOLAUS, CA 95659
E. Baker	2/13/14	165 Worth Rd Nicolaus Ct 95659

PETITION OF PROPERTY OWNERS AND ASSESSMENT PAYERS

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Name

Date

Residence

David Williams

2-13-14

6950 Garden Hwy Nicolai

Robert Schaber

2-13-14

2071 Schaber Rd Nicolai

Wicky L Haymore

02-13-14

1054 NICOLAUS AVE

Don Haymore

02-13-14

1054 Nicolaus Ave

Hedy Glimmors

2-13-14

1016 Marcum Rd., Nicolaus, CA.

Ron Schaber

2-13-14

3104 Garden Hwy, Nicola

Verni Schaber

2-13-14

3104 Garden Hwy, Nicola

Sheryl Osterli

2-13-14

1485 W. Catlett Rd., Pleasant Grove,

Roy C. Osterli II

2-13-14

1485 W. Catlett Rd., Pleasant Grove, CA

Richard R. Intan J.

2-13-14

2787 PLEASANT GROVE Rd. P.G.

Tom J. Schaber

2-13-14

304 Lee Rd. Nicolaus GA

Thomas Smith

2-13-14

330 W. Catlett Rd Nicolaus CA

Rosanna Smith

2-13-14

330 W. Catlett Rd Nicolaus CA

Connie Jerome

2-13-14

4089 Pleasant Grove Rd, Pleasant CA

Frank Nicholas

2-13-14

6522 Vernon Rd. Nicolaus, CA



20 February 2014

Sungho Lee, Ph. D.
 Engineer, W.R., STATE OF CALIFORNIA
 Central Valley Flood Protection Board
 3310 El Camino Ave., Room 151
 Sacramento, CA 95821

Re: **Bridge 165.89: Sacramento (Yankee Slough) – Sutter County**
 CVFPB Permit Application No.: 18906D
 Near Trowbridge, California
 Olsson Project No. 008-2021

Dear Sungho:

Based on feedback from the adjacent landowners, UPRR has proposed to update the bridge construction plans to include a 7-inch track raise to match the existing bridge low chord elevation. The 7-inch track raise is the maximum raise possible at this location due to the nearby infrastructure and grade restraints. The proposed 7-inch track raise requires raising the existing timber bridge and impacts to the existing track for 1,000 ft in both direction of the bridge, substantially increasing the complexity and cost of the bridge replacement project. Per the recommendation of the U.S. Army Corps of Engineers, riprap will be placed within UPRR right-of-way along the sloping abutments of the bridge, to armor the track embankment during peak flood events.

Based on the hydrologic and hydraulic evaluation, the WSE_{100} at the upstream face of the existing bridge was computed to be 60.01 ft. The low chord elevation of the existing bridge is 57.48 ft. The base-of-rail elevation is 60.71 ft. The revised proposed bridge low chord elevation will be 57.48 ft, equal to the existing. The corresponding computed WSE_{100} associated with the proposed bridge is 60.01 ft. Therefore, the proposed bridge will have no effect on the 100-year WSE at the upstream face, compared to the existing bridge. Since the crown of the adjacent levee is at Elev. 60.3, for all practical purposes the 100-year WSE is the bank full capacity of the levee.

Please find attached four copies of the following information, to reflect the 7-inch track raise:

1. HEC-RAS 4.1.0 model – Showing the proposed bridge low chord elevation, equal to the existing condition. In addition, the low chord elevation of the existing bridge in HEC-RAS was updated to match the existing bridge plans (Elev. 57.48).
2. Revised Figure F-4; Upstream Face Profile – Proposed Bridge: Showing the revised low chord elevation and placement of riprap along the sloping abutments.
3. Revised Sheet 2 of 3: Typical Levee Section: Showing the revised low chord elevation and 7-inch track raise and placement of riprap along the sloping abutments.
4. Revised Sheet 3 of 3: Typical Levee Section: Showing the revised low chord elevation and 7-inch track raise and placement of riprap along the sloping abutments.
5. UPRR Construction Drawings: Showing the revised low chord elevation and 7-inch track raise and placement of riprap along the sloping abutments.

Central Valley Flood Protection Board
20 February 2014

It should be noted that the proposed bridge will have an opening area of 4,149 ft² compared to 4,022 ft² for the existing bridge, which results in a 3% increase in the opening area of the bridge due fewer bents within the bridge opening. The existing timber bridge has 15-ft spans, compared to the proposed bridge's 30-ft concrete spans. Due to fewer bents within the bridge opening, the risk of trash, trees and other debris accumulating along the upstream face of the bridge will be reduced.

Since the existing low chord (Elev. 57.48) will be equal to the proposed low chord (Elev. 57.48), the proposed bridge is in compliance with California Code of Regulations Section 128; (a); (16) regarding the replacement railroad bridge must have the soffit members no lower than those of the replacement bridge.

In summary, the proposed concrete bridge's low chord elevation will be equal to the existing timber bridge low chord which results in a 3% increase in the opening area of the proposed bridge due to fewer bents within the bridge opening. The proposed bridge meets the regulatory no-rise requirement during the 100-year event (i.e. bank full capacity). If you have any questions concerning this project, or need additional information, please contact me at 402.458.5015 or bstrahm@olssonassociates.com, at your earliest convenience. Please refer your future correspondence to **Bridge 165.89, Sacramento Subdivision**.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. Strahm', with a stylized, cursive script.

Branden Strahm, PE, CFM.

Encls.

cc: Mr. Steve Cheney, UPRR

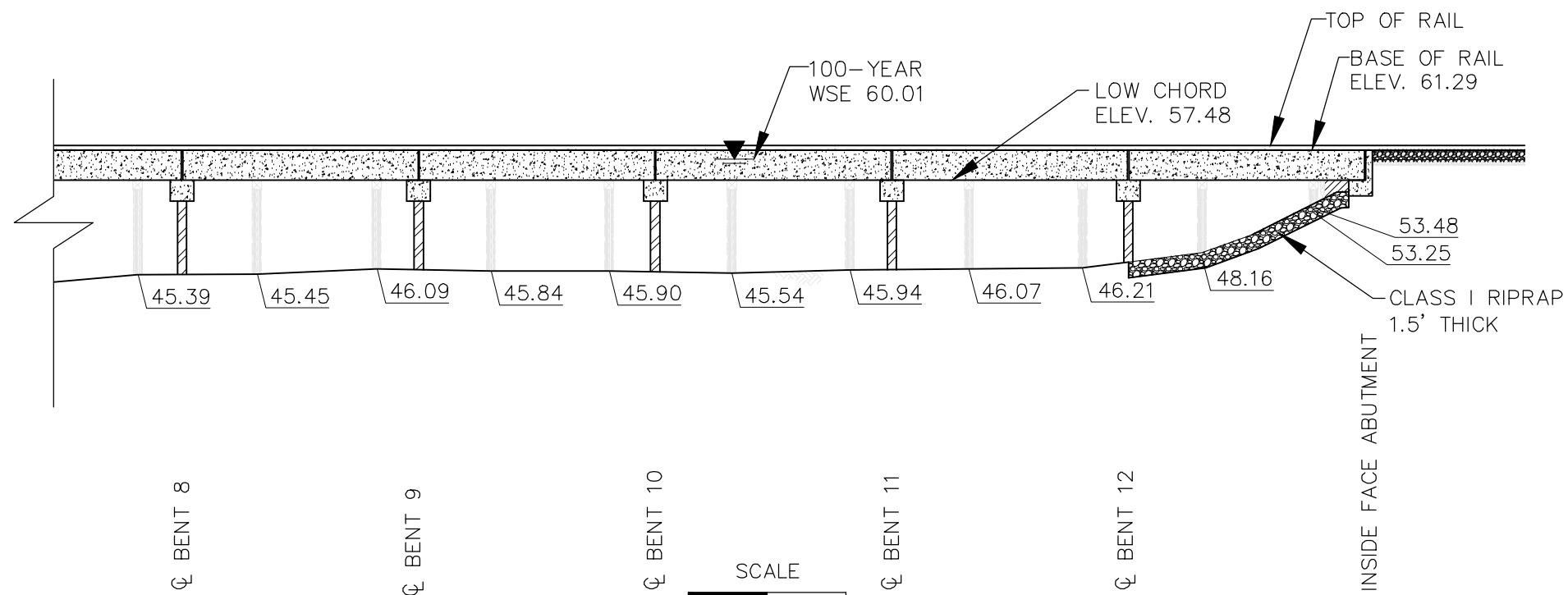
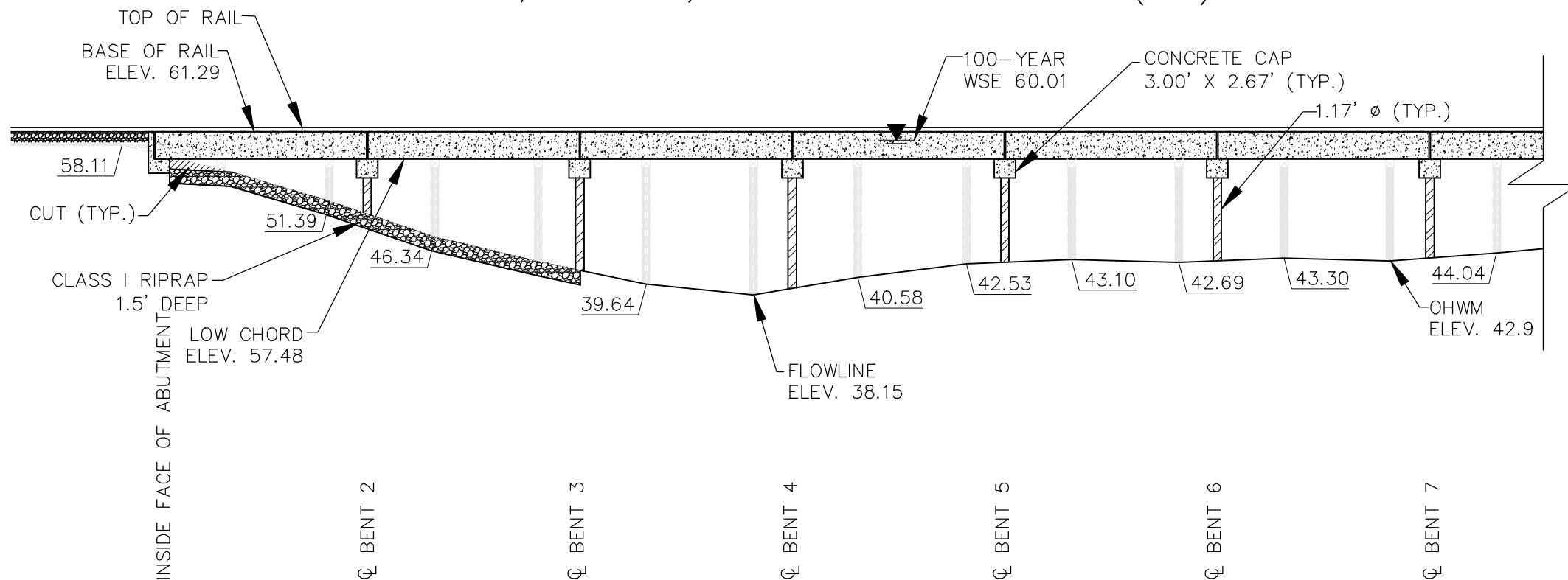
F:\Projects\008-2021\Doc\165.89Sacramento.CVFPB_response.doc

SOUTH
PLEASANT GROVE

NORTH
MOUNKES

BRIDGE 165.89 – SACRAMENTO SUBDIVISION

PROPOSED: 12-SPAN, 360' LONG, PRESTRESSED CONCRETE BOX (PCB) GIRDER

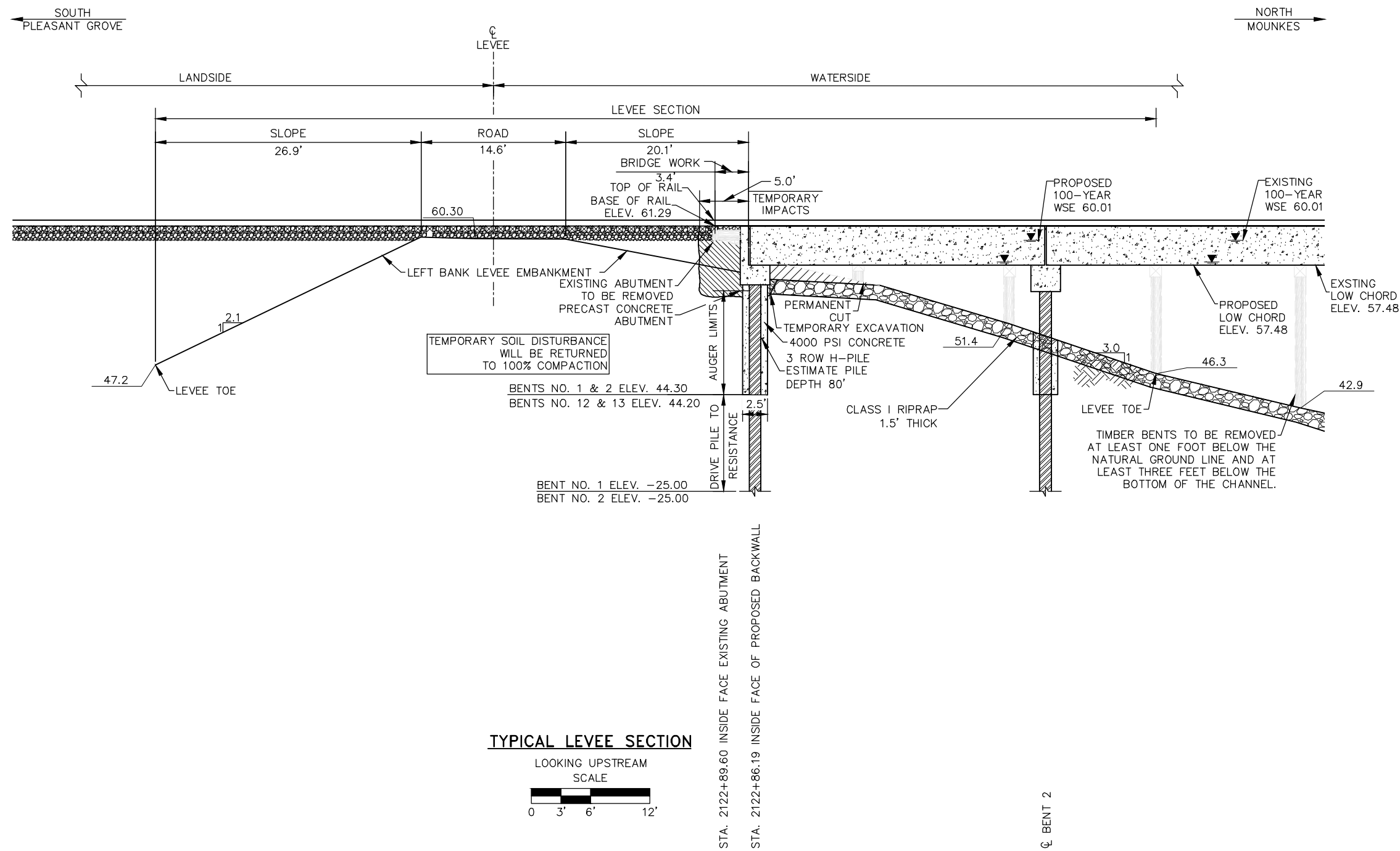


PROJECT: 2008-2021
DRAWN BY: GVP
DATE: 2/20/14

PROPOSED BRIDGE – UPSTREAM FACE PROFILE

MOLSSON ASSOCIATES
1111 Lincoln Ave., Suite 111
P.O. Box 94908
Lincoln, NE 68501-4908
TEL: 402.474.5311
FAX: 402.474.5169
www.molssonassociates.com

FIGURE
F-4



FOR CHIEF ENGINEER DESIGN DATE

NAVD 1988

NO.	DATE	REVISIONS

1111 Lincoln Mall, Suite 111
P.O. Box 91608
Lincoln, NE 68501-4608

TEL 402.474.6311
FAX 402.474.5160
www.molssonconsulting.com

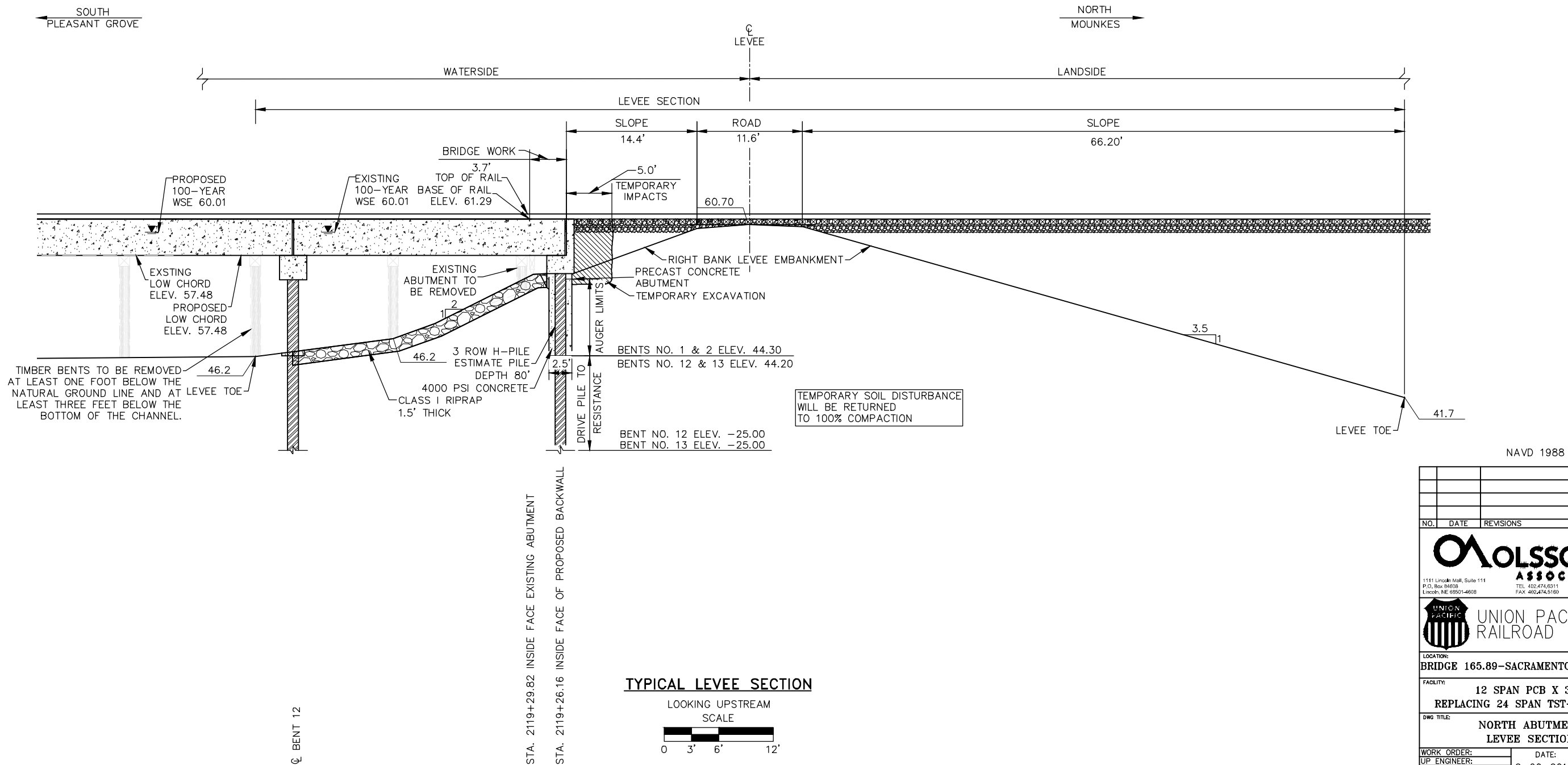
OFFICE OF CHIEF ENGINEER DESIGN

LOCATION:
BRIDGE 165.89-SACRAMENTO SUBDIVISION

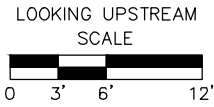
FACILITY:
**12 SPAN PCB X 360'
REPLACING 24 SPAN TST-BD X 360'**

DWG TITLE:
**SOUTH ABUTMENT
LEVEE SECTION**

WORK ORDER:	DATE:	SURVEY:
UP-ENGINEER:	2-20-2014	11-17-08
DESIGN BY:	CHECKED BY: BJS	
DRAWN BY: NUB		
CHECKED BY:	SHEET	C E NUMBER
SCALE: AS SHOWN	2 OF 3	



TYPICAL LEVEE SECTION



NAVD 1988

NO.	DATE	REVISIONS

MOLSSON ASSOCIATES
1111 Lincoln Mall, Suite 111
P.O. Box 94608
Lincoln, NE 68501-4608
TEL: 402.474.6311
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UNION PACIFIC RAILROAD
OFFICE OF CHIEF ENGINEER DESIGN

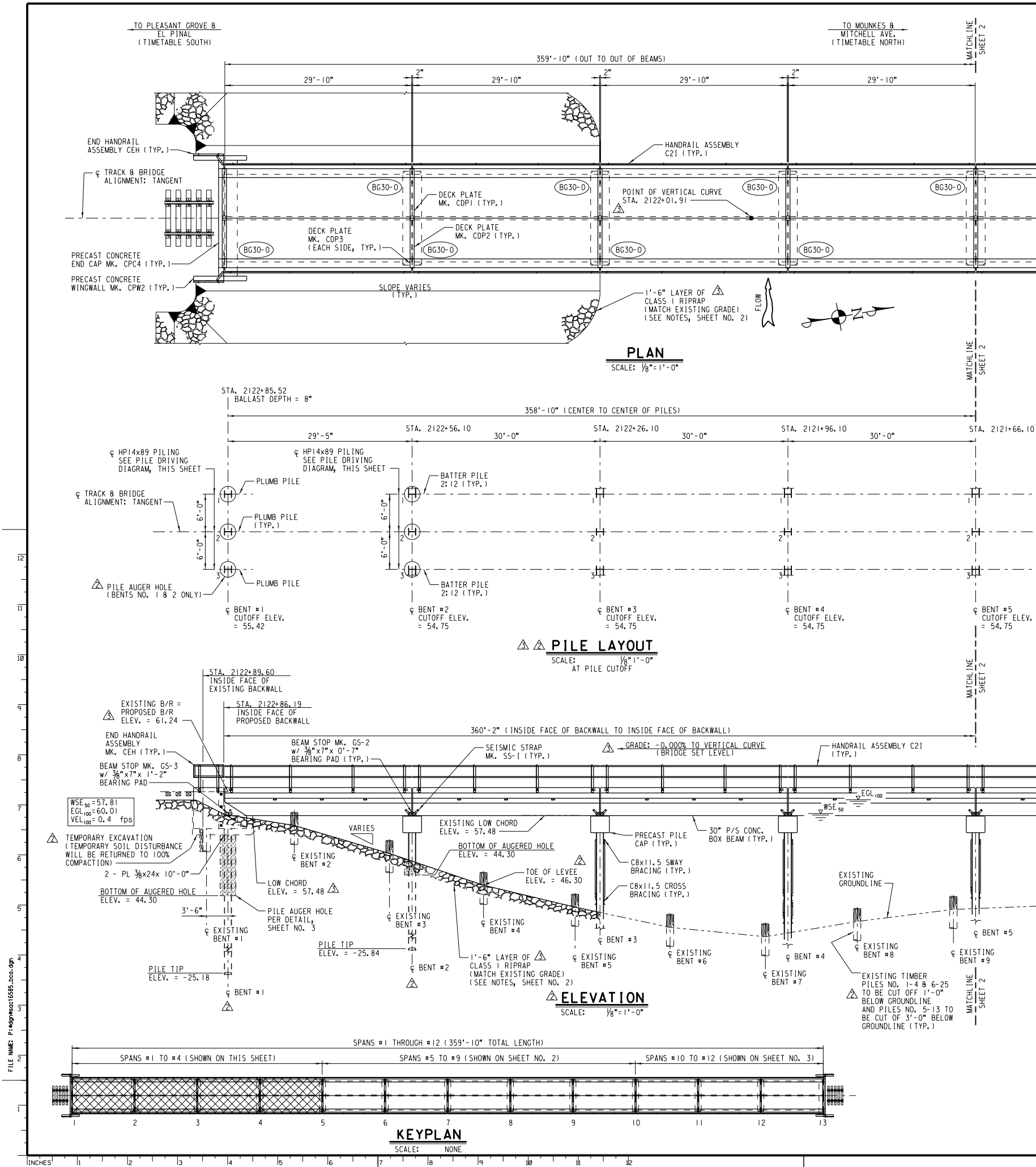
LOCATION:
BRIDGE 165.89-SACRAMENTO SUBDIVISION

FACILITY:
**12 SPAN PCB X 360'
REPLACING 24 SPAN TST-BD X 360'**

DWG TITLE:
**NORTH ABUTMENT
LEVEE SECTION**

WORK ORDER: UP-ENGINEER: DESIGN BY: CHECKED BY: BJS DRAWN BY: NUB CHECKED BY: SCALE: AS SHOWN	DATE: 2-20-2014	SURVEY: 11-17-08
SHEET 3 OF 3		C E NUMBER

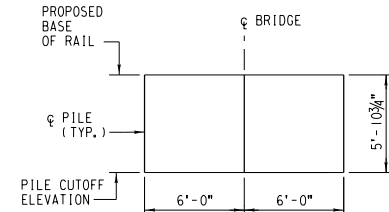
FOR CHIEF ENGINEER DESIGN DATE



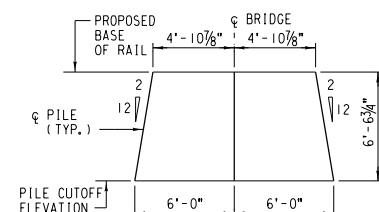
BILL OF MATERIAL				
REQ'D	UNIT	DESCRIPTION	STORE ITEM NO	ORDERED BY
24	EA.	30" x 29'-10" PRESTRESSED CONCRETE BOX BEAM MK. BG30-0, TYPE 1 w/ SLOPED CURB. (REF. 3)	511-7828	MANAGER TRACK PROJECT
2	EA.	PRECAST CONCRETE END CAP MK. CPC4 FOR 30" CONCRETE BOX BEAM (REF. 4)	511-0035	
4	EA.	PRECAST CONCRETE WINGWALL MK. CPW2 FOR 30" CONCRETE BOX BEAM (REF. 4)	511-0036	
10	EA.	15'-0" PRECAST CONCRETE PILE CAP FOR USE WITH CAPMASTER w/ BEARING PADS FOR BOX BEAMS (REF. 5 AND 6 AND DETAILS, SHEET NO. 3)	511-0352	MANAGER BRIDGE CONST.
78	EA.	HP14x89x40' STEEL PILE (ASTM A572, PLAIN)	510-7557	
39	EA.	PILE SPLICER FOR HP14x89 STEEL PILE	510-8065	
39	EA.	PILE POINTS FOR PILE SPLICER FOR HP14x89 STEEL PILE	510-8063	MANAGER BRIDGE CONST.
42	EA.	C8x11.5 x 20'-0" BRACE (ASTM A572, PLAIN) (FIELD CUT TO LENGTH)	247-6367	
22	EA.	BEAM STOP MK. GS-2 (REF. 7)	510-0595	
4	EA.	BEAM STOP MK. GS-3 (REF. 7)	510-0596	MANAGER BRIDGE CONST.
24	EA.	HANDRAIL ASSEMBLY C21 FOR 29'-10" CONCRETE INTERIOR SPAN, (REF. 7)	510-0472	
4	EA.	END HANDRAIL ASSEMBLY CEH FOR CONCRETE SPAN (REF. 6)	513-3020	
13	EA.	DECK PLATE MK. CDP1, GALVANIZED (REF. 7)	510-0590	MANAGER BRIDGE CONST.
13	EA.	DECK PLATE MK. CDP2, GALVANIZED (REF. 7)	510-0591	
26	EA.	DECK PLATE MK. CDP3, GALVANIZED (REF. 7)	510-0592	
44	EA.	3/8" x 7" x 0'-7" ELASTOMERIC BEARING PAD	510-3635	MANAGER BRIDGE CONST.
4	EA.	3/8" x 7" x 1'-2" ELASTOMERIC BEARING PAD	510-3637	
4	EA.	PL3/8x24x10'-0" (A36, PLAIN)	510-7650	
44	EA.	SEISMIC STRAP MK. SS-1 (PER DETAIL, REF. 6)	510-0601	MANAGER BRIDGE CONST.
4	EA.	SEISMIC STRAP MK. SS-EB (PER DETAIL, REF. 6)	510-0602	
110	EA.	1/2"x28" x 6'-4" PREMOULDED EXPANSION JOINT FILLER PER ASTM D1751	511-8213	
2	EA.	BRIDGE MARKER SIGN PER ENGINEERING STANDARDS DRAWING NO. 0507	P00-2616	MANAGER BRIDGE CONST.
2	EA.	PRIVATE PROPERTY / NO TRESPASSING SIGN	393-3651	
2	EA.	9-FT STEEL MOUNTING POST	393-7510	
2	EA.	SIGN MOUNTING HARDWARE KIT	393-7314	MANAGER BRIDGE CONST.
4	EA.	HP14x73x40'-0" STEEL PILING (A572, PLAIN)	516-1004	
24	EA.	PL1/2"x7"x4'-0" STIFFENER PLATES	514-3032	
410	TON	RIPRAP, CLASS 1	562-2764	MANAGER BRIDGE CONST.
1	LOT	4000 PSI CONCRETE FOR PILE SOCKETS (BENTS NO. 1, 2, 12 & 13)		
1	LOT	PL 400 HEAVY DUTY CONSTRUCTION ADHESIVE		
17	CU. YD.	WELL-GRADED 1 1/2" MINUS CRUSHED ROCK		MANAGER BRIDGE CONST.
30	CU. YD.	FILL MATERIAL		

EST. WT. OF STEEL PILING = 277,680 LB.
STEEL SWAY & CROSS BRACING = 9,660 LB.
MISCELLANEOUS STEEL (NOT INCL. BOLTS) = 25,451 LB.

NOTE: THE NUMBER OF PILE CAPS BEING ORDERED HAS CHANGED. ONE CAP WILL BE SHIPPED SEPARATELY TO THE SITE w/ THE CAPMASTER DEVICE.



PILE DRIVING DIAGRAM SCALE: 1/8"=1'-0" BENTS #1 AND #13



PILE DRIVING DIAGRAM SCALE: 1/8"=1'-0" BENTS #2 THROUGH #12

POSTCONSTRUCTION COMPLIANCE

Contractor or UPRR Manager in charge of construction to provide to the office of the Director Structures Design as-built drawings confirming that the project was constructed in compliance with the plans and indicating any construction variances.

SIGNED

In Charge of Construction

Date

APPROVED

Steve Chaney

8/2/11

FOR AVP ENGINEERING DESIGN/CONSTRUCTION DATE

DRAWING SCHEDULE				
SHEET NO.	DESCRIPTION			
1	GENERAL ARRANGEMENT (SHEET 1 OF 3) AND BILL OF MATERIAL			
2	GENERAL ARRANGEMENT (SHEET 2 OF 3) AND CONSTRUCTION NOTES			
3	GENERAL ARRANGEMENT (SHEET 3 OF 3) AND PILE CAP MODIFICATIONS			
4	LONGITUDINAL BRACING DETAILS			
5	TOP OF RAIL PROFILE			

NO.	DWG. NO.	SHEET NO.	REV. NO.	DESCRIPTION
1	530000	A1-A7	A	BOX AND SLAB BEAM, CONSTRUCTION PLANS
2	530000	B1-B4	A	30" BOX BEAM, CONSTRUCTION DETAILS
3	500000	BG1, BG2	F	30" DOUBLE BOX BEAM, FABRICATION PLANS
4	501000	A1	-	PRECAST END CAP FOR 30" BOX BEAM
5	501000	C1, C2	-	PRECAST CONCRETE PILE CAP
6	531010	I	-	PRECAST CONCRETE PILE CAP BEARING PADS
7	502000	I-4	A	STEEL HARDWARE AND HANDRAIL ASSEMBLIES

EST. WT. OF PRECAST CONCRETE	
BEAM MK. BG30-0 = 49,500 LB. EA. (24.8 TON)	
END CAP MK. CPC4 = 24,500 LB. EA. (12.3 TON)	
WINGWALL MK. CPW2 = 4,900 LB. EA. (2.5 TON)	
15'-0" PILE CAP = 19,700 LB. EA. (9.9 TON)	

NO.	DATE	REVISIONS
3	02/18/14	RAIL RAISE
2	11/27/12	ADDED PILE AUGER HOLE DETAIL FOR BENTS NO. 1, 2, 12 & 13
1	04/26/12	PILE CAP CHANGED FOR USE OF CAPMASTER

UNION PACIFIC RAILROAD Office of AVP Engineering Design/Construction	
LOCATION: BRIDGE 165.85 SACRAMENTO SUB 8.7 MILES NORTH OF PLEASANT GROVE, CA	
FACILITY: 12 SPAN PCB x 360' REPLACING 24 SPAN TST-BD X 360'	
DWG TITLE: GENERAL ARRANGEMENT (SHEET 1 OF 3) AND BILL OF MATERIAL	
PROJECT ID: 17214 WORK ORDER: 89582 DESIGN BY: SLG CHECKED BY: VLV DRAWN BY: KDM CHECKED BY: VLV SCALE: AS NOTED	UP ENGINEER: SLG SHEET NO. 1 of 5 C E NUMBER 118643

DESIGN NOTES

This structure was designed for Cooper E80 Live Load with 30" ballast and impact.

Design Pile Load: End Bent = 76 Ton
Interior Bent = 120 Ton

This plan is for 8" (min.) ballast under timber ties.

CONSTRUCTION NOTES

GENERAL:

Field verify all dimensions, stations and elevations prior to start of construction.

Contact the Union Pacific "Call Before You Dig" number 90 days (not less than 60 days) prior to proposed construction start date. Prior to construction, confirm that all necessary relocations have been completed. The CBVD number is: 1-800-336-9193.

Profile: No change in main line elevation.

Elevations based on drawing titled "BRIDGE 165.89 - SACRAMENTO SUBDIVISION - BRIDGE REPLACEMENT LOCATION SURVEY," prepared by Olsson Associates, dated 04/09/2009.

TBM: Temporary bench mark established with nail located in power pole north of Bridge 165.89, Sta. 2120+39.56, left 32.38' from centerline of track, Elev. = 49.37.

Stationing based on UPRR Right-of-Way and Track maps at the north face of south backwall of existing Bridge 165.85, Sta 2122+89.60.

Right of Way: 50' both sides of track centerline.

PILE DRIVING:

All numbered pile shall be driven to 112 ton capacity.

All piling to be installed at Bents No. 1, 2, 12 and 13 per the "Pile Auger Hole Detail" on Sheet No. 3.

If any numbered pile cannot be driven to this capacity the Structures Design Group of the Office of AVP Engineering Design/Construction must be notified.

Splice pile per standard drawing Plan No. 530000, Sheet No. A2. Pile splices shall be located a minimum of 15' below the proposed or existing ground surface, whichever is lower. After pile driving is complete, provide pile driving logs to the office of the Director Structures Design.

Estimated capacity of driven piles shall be calculated using the Modified ENR formula, with Factor of Safety of 5. Direct questions to the Structures Design Group, Office of AVP Engineering Design/Construction.

FIELD WELDING:

Welding must be accomplished with the SMAW or FCAW process.

Welding must be in compliance with the requirements specified in AWS D1.5-95, except $\frac{1}{16}$ in. fillet welds may be made with a single pass.

Welding electrodes must be E7018 for SMAW or E70T-1 or E70T-5 for FCAW.

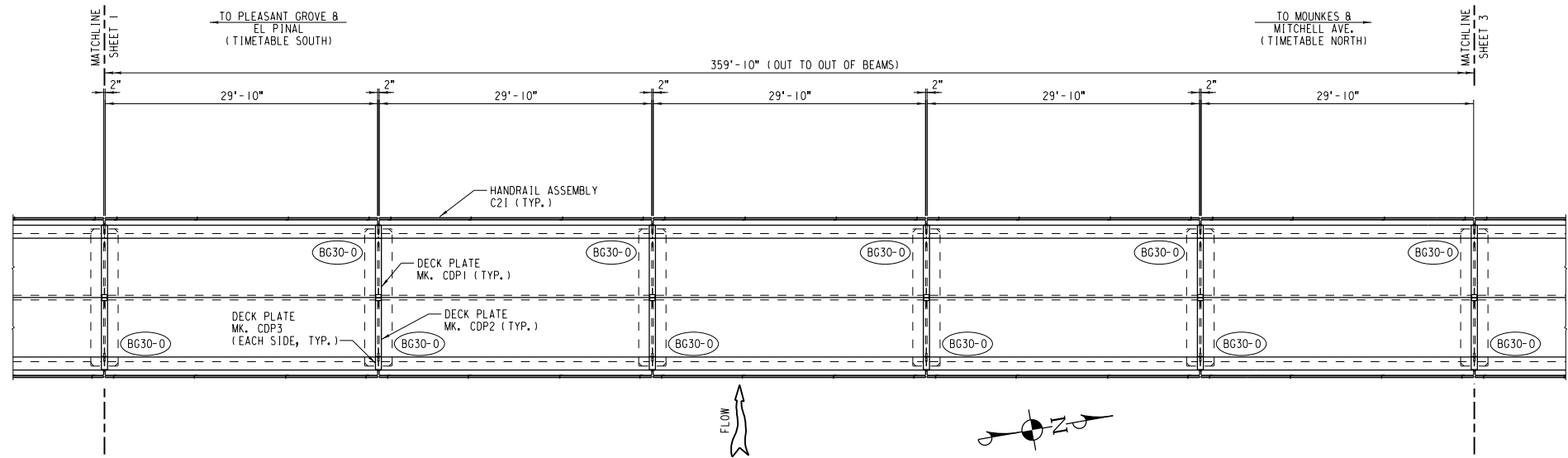
Welders must possess valid certification.

WELL-COMPACTED FILL:

Well-compacted fill shall be well graded granular soil free of any organic material, stones larger than 3 inches, frozen lumps, debris or excessive moisture. All compaction shall be determined using ASTM D1556 for field test and ASTM D1557 for moisture and density. Fill shall be compacted to 95% of maximum dry density as defined in ASTM D1557 (Modified Proctor). Fill shall be placed in layers not to exceed 12 inches.

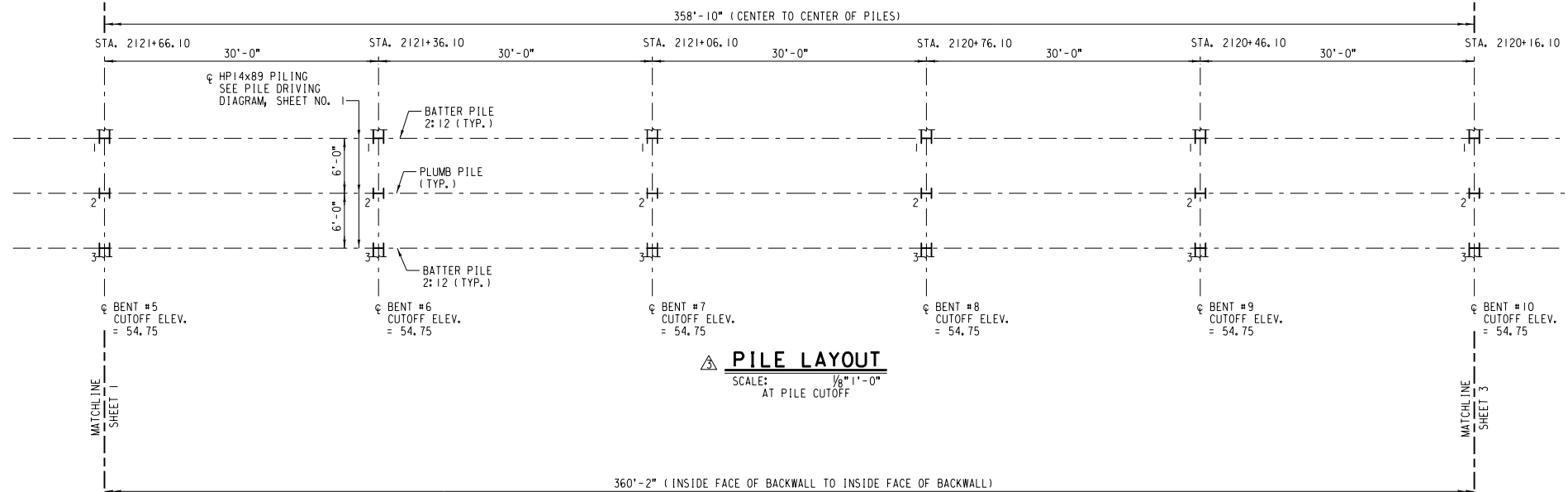
CLASS 1 RIPRAP:

Riprap shall be placed in such a manner as to avoid segregation of the various sizes of rock. Individual rocks shall be placed in tight contact with one another in such a way to produce the least amount of void spaces. Riprap shall be solid, unfractured rock or concrete, bulky in shape with sharp angular edges. Weight of individual rocks shall vary from a minimum of 50 lb. to a maximum of 200 lb. for Class 1, UPRR Item No. 562-2764.



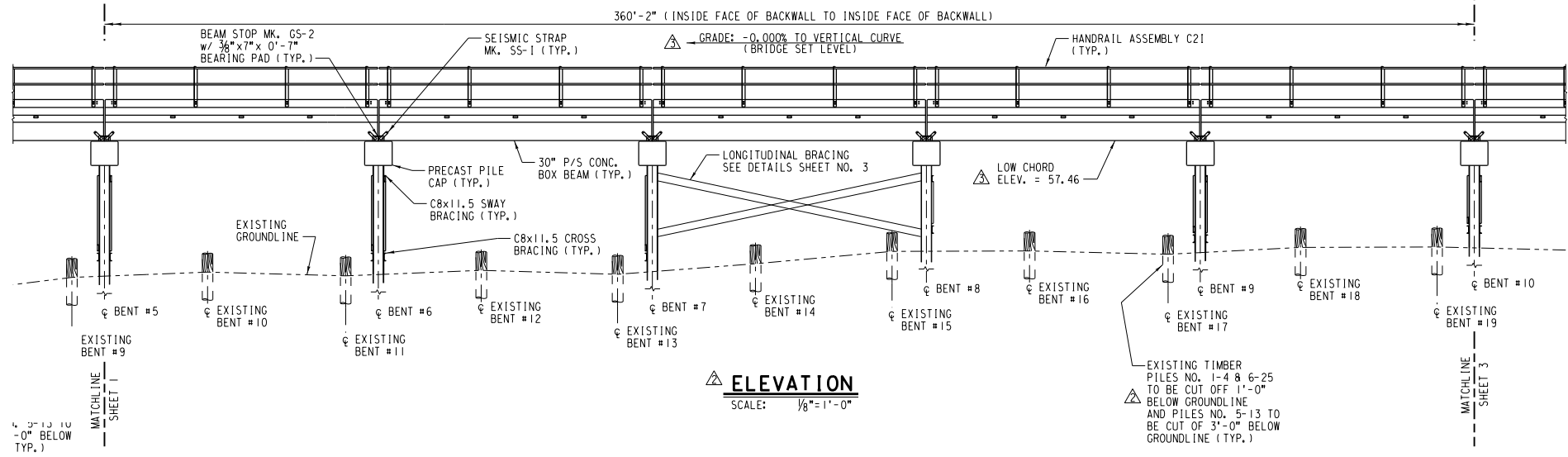
PLAN

SCALE: $\frac{1}{8}$ "=1'-0"



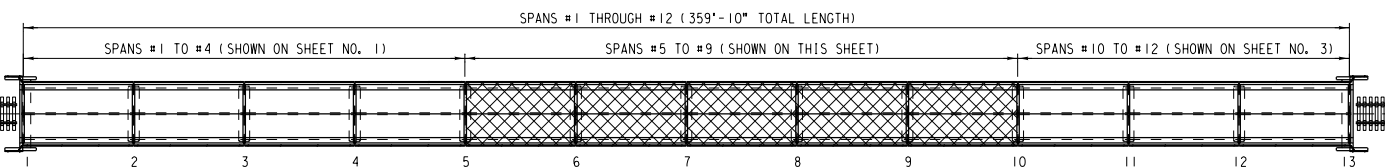
PILE LAYOUT

SCALE: $\frac{1}{8}$ "=1'-0"
AT PILE CUTOFF



ELEVATION

SCALE: $\frac{1}{8}$ "=1'-0"



KEYPLAN

SCALE: NONE

APPROVED

Steve Chaney
FOR AVP ENGINEERING DESIGN/CONSTRUCTION

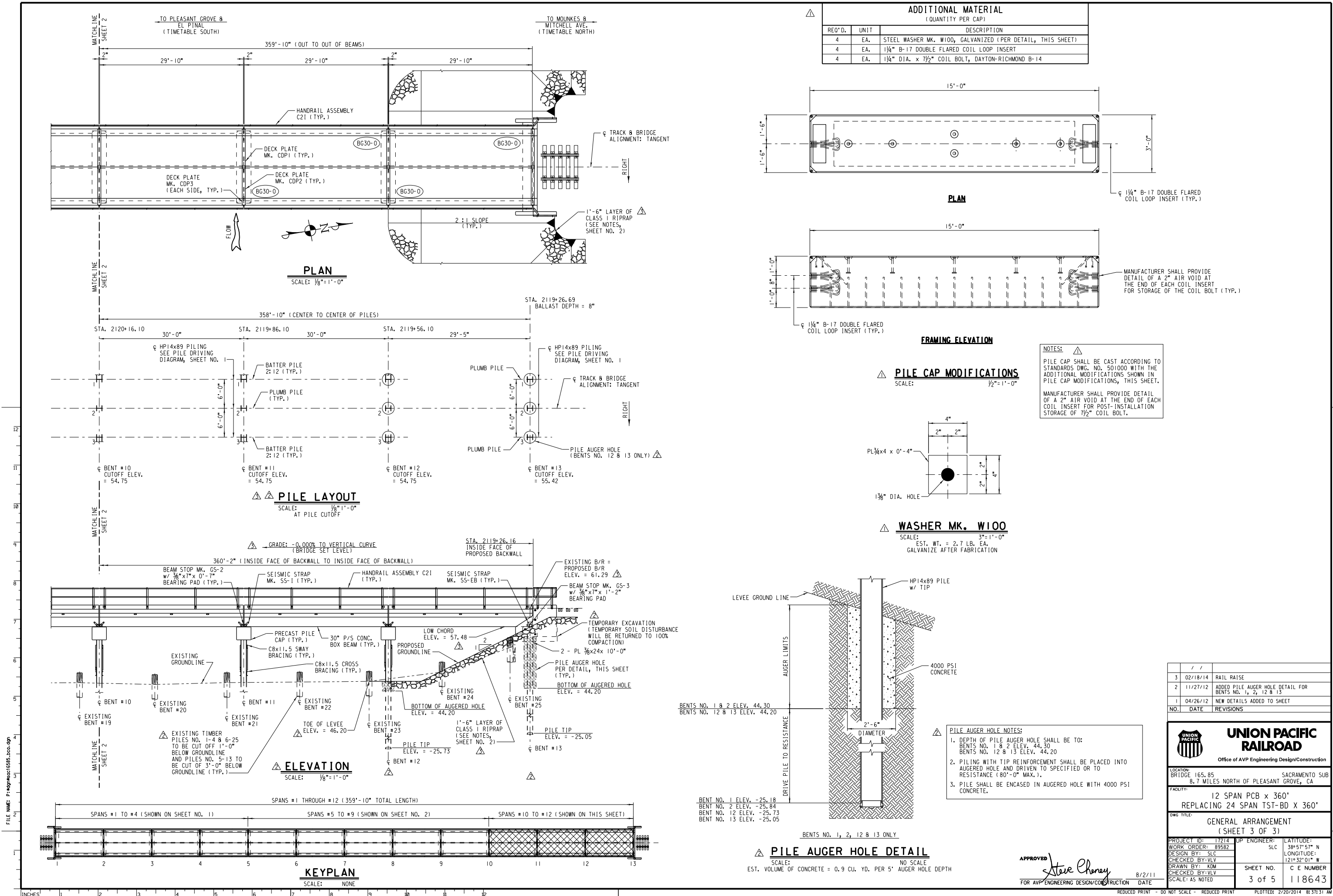
8/2/11

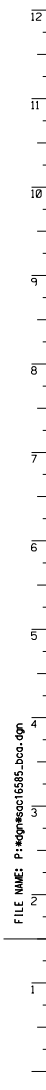
DATE

PROJECT ID: 17214	UP ENGINEER: SLC	LATITUDE: 38°57'57" N
WORK ORDER: 89582		LONGITUDE: 121°32'01" W
DESIGN BY: SLC		
CHECKED BY: VLV		
DRAWN BY: KDM		
CHECKED BY: VLV		
SCALE: AS NOTED		
SHEET NO. 2 of 5	C E NUMBER 118643	

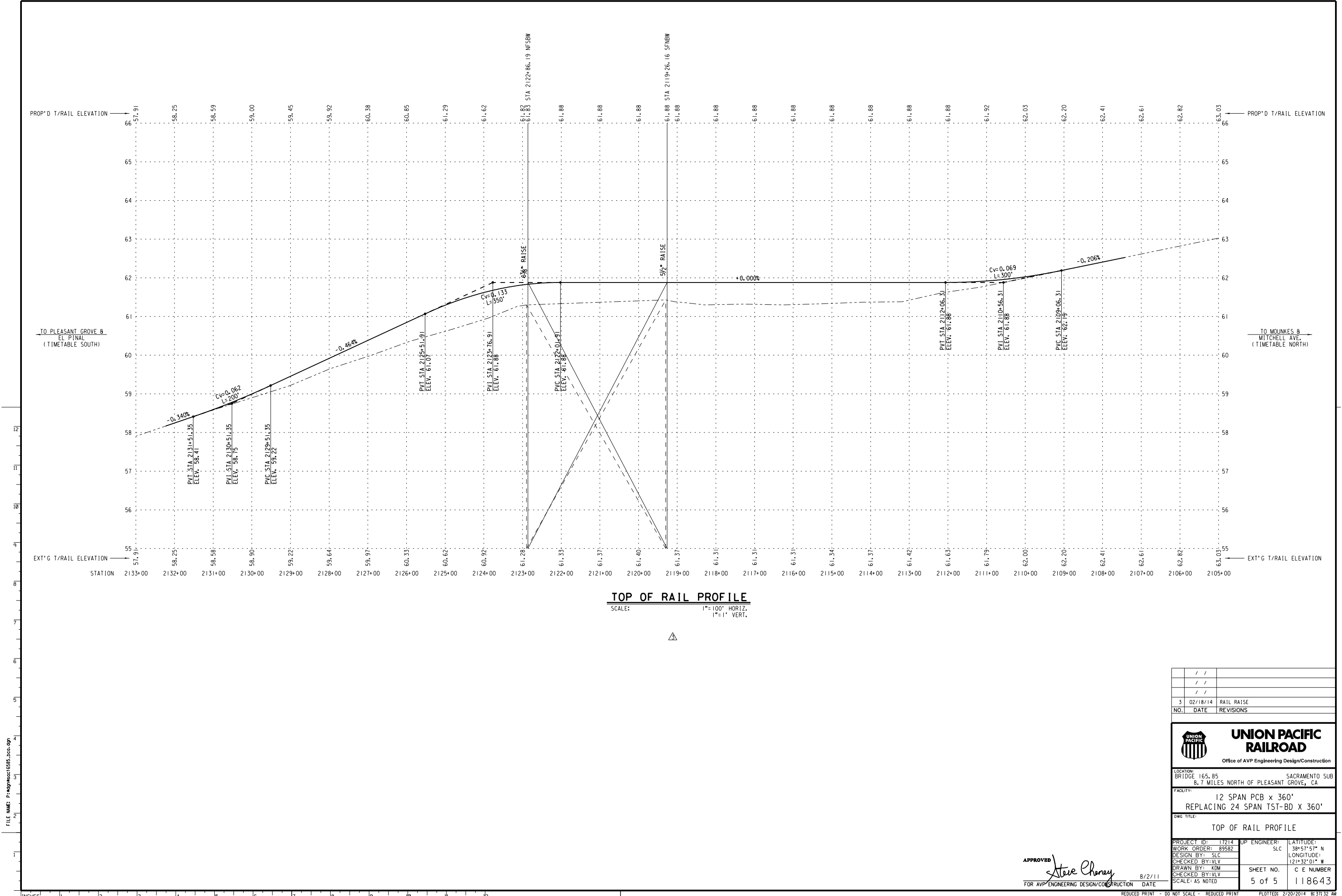
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PLOTTED: 2/20/2014 8:37:31 AM






APPROVED Steve Cheney 8/2/11
FOR AVP ENGINEERING DESIGN/CONSTRUCTION DATE



FILE NAME: P:\sgp\wood\6585.bcd.dgn

APPROVED
Steve Chaney
FOR AVP ENGINEERING DESIGN/CONSTRUCTION DATE 8/2/11

3	02/18/14	RAIL RAISE
NO.	DATE	REVISIONS

		UNION PACIFIC RAILROAD	
Office of AVP Engineering Design/Construction			
LOCATION: BRIDGE 165, 85		SACRAMENTO SUB 8.7 MILES NORTH OF PLEASANT GROVE, CA	
FACILITY: 12 SPAN PCB x 360' REPLACING 24 SPAN TST-BD X 360'			
DWG TITLE: TOP OF RAIL PROFILE			
PROJECT ID: 17214	UP ENGINEER: SLC	LATITUDE: 38°57'57" N	SHEET NO. 5 of 5 C E NUMBER 118643
WORK ORDER: 89582	DESIGN BY: SLC	LONGITUDE: 121°32'01" W	
CHECKED BY: VLV	DRAWN BY: KDM	SCALE: AS NOTED	
CHECKED BY: VLV			
CHECKED BY: VLV			



TECHNICAL MEMORANDUM

TO:	Mr. Sungho Lee, Ph. D, CVFPB Ms. Nancy C. Moricz, P.E., CVFPB Mr. Andrew Stresser, Reclamation District 1001
CC:	Steve Cheney, P.E., UPRR
FROM:	Branden Strahm, PE, CFM
RE:	Bridge 165.89: Sacramento Subdivision – Yankee Slough CVFPB Application No.: 18906 D
DATE:	6 March 2014
PROJECT #:	2008-2021

This technical memorandum (TM) has been prepared in response to the Reclamation District 1001 (RD 1001) letter, dated 27 February 2014 provided to the Central Valley Flood Protection Board (CVFPB) as a formal protest to permit Application 18906 D for the replacement of UPRR Bridge 165.89 Sacramento Subdivision over Yankee Slough. RD 1001 initially asked for UPRR to meet the existing lowest chord elevation which results in a 7" track raise at this location. UPRR agreed to this request and re-designed the project to accommodate this request. RD 1001 has now requested raising the low chord of the bridge up to or above the current CVFPB Project Design Water Surface Elevation or mitigating the impacts of the encroachment to the satisfaction of all parties involved. This TM summarizes the hydrologic modeling performed for this location with various bridge replacement scenarios as well as providing additional information regarding the issues, costs, and impacts that would result from a 6.5-foot track raise.

Project Purpose

The purpose of the proposed project is to replace and stabilize the existing timber bridge with a reinforced concrete bridge to meet UPRR safety standards. The timber piles and stringers are deteriorating and have nearly reached the end of their useful life. The condition of the bridge now requires replacement rather than on-going maintenance.

Project Location and Description

The bridge is located along the Sacramento Subdivision of UPRR in rural Sutter County, California. More specifically, the bridge is located in the northeast corner of Section 21, Township 13 North, Range 4 East at latitude 38° 57' 57" and longitude 121° 32' 1". Bridge 165.89 spans Yankee Slough and is surrounded by a system of federal levees. The levees approach the track at a skew, and then turn 90-degrees immediately downstream of the bridge. Bridge 165.89 is located within a FEMA-designated floodplain Zone AE, as shown on the Flood Insurance Rate Map (FIRM) for Sutter County, California Unincorporated Areas (Community-Panel Number 060394 0710 E, effective date 2 December 2008). The confluence of Yankee Slough with Bear River is approximately 4,000 ft downstream of Bridge 165.89. Based on the Sutter County FIRM, the Yankee Slough 100-year water surface elevation (WSE) is at Elev. 60.0 (NAVD 1988). Due to the close proximity of UPRR Bridge 165.89 to the Bear River confluence, during rare flood events the hydraulic performance of UPRR Bridge 165.89 will be influenced by the Bear River backwater. Presently, bridge 165.89 is a 24-Span, 360-ft long, Timber Stringer Trestle - Ballast Deck (TST-BD) bridge.

Alternative Analysis

As recommended by CVFPB a sensitivity analysis was performed, comparing the natural condition (no bridge scenario), existing conditions, proposed bridge that matches the existing low chord elevation, and a proposed bridge option that meets California Code of Regulations Section 128; (a); (10); (A), in which the proposed bridge's low chord elevation will provide 3 ft of freeboard over the design WSE. Table 1 provides a summary of the proposed alternatives.

Table 1: Summary of Alternatives at UPRR Bridge 165.89 over Yankee Slough

Alternatives	Description
1. Natural Condition	Remove UPRR Bridge 165.89 from the HEC-RAS model (no bridge scenario).
2. Existing Condition	The current 24-span, 360' long timber bridge configuration.
3. Proposed 7" Track Raise *	Proposed 12-span, 360' long concrete bridge designed to match existing low chord elevation, which requires raising the existing track 7 inches.
4. Proposed 6.5' Track Raise	Proposed 12-span, 360' long concrete bridge designed to meets 3-ft freeboard requirement over the design WSE, which requires raising the existing track 6.5-feet.

* UPRR's preferred bridge replacement option is the 7-inch track raise that matches the low chord elevation of the existing timber bridge. The 7-inch track raise is the maximum practicable raise possible at this location due to the nearby infrastructure and grade restraints. The proposed 7-inch track raise requires modification to the existing timber bridge and impacts to the existing track for 1,000 ft in both direction of the bridge, substantially increasing the complexity and cost of the bridge replacement project.

Hydrology

The Operation and Maintenance (O&M) Manual, prepared by the U.S. Army Corps of Engineers – Sacramento District has a Yankee Slough channel capacity of 2,500 cfs. This discharge is consistent with the current Sutter County Flood Insurance Study's (FIS) computed 100-year discharge of 2,480 cfs. In addition, the U.S. Army Corps of Engineers performed an update to the 100-year design discharge using HEC-HMS rainfall-runoff model resulting in a computed 100-year discharge of 1,723 cfs. Using the most conservative flows, the U.S. Army Corps of Engineers O&M channel capacity of 2,500 cfs will be used in the hydraulic analysis.

Hydraulics

A hydraulic investigation was performed for the above alternatives using the U.S. Army Corps of Engineers' Hydrologic Engineering Center – River Analysis System (HEC-RAS) model to evaluate bridge hydraulics due to the replacement of UPRR Bridge 165.89 over Yankee Slough.

The hydraulic analysis was based on utilizing FEMA's unsteady flow levee breach model, U.S. Army Corps of Engineers O&M channel capacity of 2,500 cfs and incorporating Olsson's bridge survey information. **UPRR Bridge 165.89 Sacramento is represented at HEC-RAS River Station 0.770 along Yankee Slough; Main Reach.** Due to the close proximity of UPRR Bridge 165.89 to the confluence of Bear River, a starting water surface elevation of 60.0 was used as the downstream starting/boundary condition for the hydraulic analyses. **The surveyed crown of the adjacent levees are at Elev. 60.3 and for all practical purposes the 100-year Water Surface Elevation (WSE) is the bank full capacity of the levee.** Table 2 shows the computed Water Surface Elevations (WSE), freeboard, and opening areas for each alternative.

Presently, UPRR Bridge 165.89 is a 24-Span, 360-ft long, Timber Stringer Trestle - Ballast Deck (TST-BD) bridge. The proposed replacement structure consists of a 12-span, 360' long, Prestressed Concrete Box Girder bridge (See attached UPRR construction drawings). The existing timber bridge has 15-ft spans, compared to the proposed bridge's 30-ft concrete spans, reducing the risk of debris accumulating along the upstream face. It should be noted that the proposed UPRR Bridge 165.89 was designed such that it results in a no-rise of the 100-year WSE along Yankee Slough.

Table 2: Summary of the Computed WSE, Freeboard and Opening Area's

Alternative	Low Chord Elevation (ft)	100-year WSE (ft)	Freeboard (ft)	Bridge Opening Area (ft²)
1. Natural Condition	N/A	60.02	N/A	N/A
2. Existing Condition	57.48	60.02	-2.54	4,022
3. Proposed 7" Track Raise	57.48	60.02	-2.54	4,149
4. Proposed 6.5' Track Raise	63.30	60.02	+3.28	5,073

Due to the Bear River high tailwater condition during the 100-year event, the computed losses through UPRR Bridge 165.89 along Yankee Slough are negligible. As such, the computed 100-year WSE along Yankee Slough for the natural, existing and proposed conditions is at Elev. 60.02.

1. Natural Condition

Under the natural condition, with UPRR Bridge 165.89 removed from the HEC RAS model (no bridge scenario), the computed 100-year WSE is at Elev. 60.02, which is controlled by the backwater from the downstream Bear River near the confluence of Yankee Slough.

2. Existing Condition

Under the existing condition, the timber bridge does not meet the minimum freeboard requirement as the low chord of 57.48 for the timber bridge is 2.54 below the 100-year WSE. The total opening area of the existing bridge is 4,022 ft² and the base-of-rail elevation is 60.71 ft. The change in WSE between the natural condition and existing conditions is 0.00 at UPRR Bridge 165.89, due to the backwater effects of the Bear River. It is noted that due to the restricted levee geometry immediately downstream of the bridge (the levee is 230 ft wide compared to 370 ft wide upstream of the bridge) the levee itself is the controlling feature when Yankee Slough is in flood stage and the Bear River backwater does not impose drainage restrictions. Sheet 1 shows the restricted levee width downstream of the bridge.

3. Proposed 7" Track Raise (UPRR's preferred option)

Under UPRR's preferred bridge replacement option, the proposed low chord elevation is 2.54 below the 100-year WSE, which is the same as the existing condition. The proposed bridge's opening area is 4,149 ft², compared to 4,022 ft² for the existing bridge, a 3% increase largely due to fewer bents within the bridge opening. The change in WSE between the existing condition and proposed conditions is 0.00 at UPRR Bridge 165.89, due to the backwater effects of the Bear River.

With UPRR's preferred option, the proposed low chord (Elev. 57.48) will be equal to the existing low chord (Elev. 57.48), and as such the proposed bridge will be in compliance with California Code of Regulations Section 128; (a); (16) regarding the replacement railroad bridge must have the soffit members no lower than those of the replacement bridge. According to Section 128; (a); (16) there are no requirements to have a specified amount of freeboard over the design floodplain for railroad bridges.

4. Proposed 6.5' Track Raise

Under the proposed Alternative 4, the new 12-span, 360' long concrete bridge is designed to meet the freeboard requirement by raising the proposed low chord to elevation 63.30 and offers 3.28' of freeboard above the 100-year WSE. The proposed bridge's effective opening area is 5,073 ft², compared to 4,022 ft² for the existing bridge, a 26% increase largely due to a higher low chord elevation and fewer bents within the bridge opening. Even with the 6.5' track raise to provide minimum of 3 ft of freeboard over the design WSE, the hydraulic performance is equal to the proposed 7" track raise alternative as well as the natural condition. Although raising the proposed bridge 6.5' meets the freeboard requirement as requested by RD 1001, it will not address the regional flooding issues along the adjacent levee system. Finally, this alternative does not significantly improve drainage capacity or improve the risk of levee protection simply

because of the fact that levee system's drainage capacity is up to the 100-year flood event and greater than the 100-year flood will spill over the levee and does not reach the bridge.

Railroad tracks are generally at a constant elevation due to extreme weight and momentum of freight and passenger trains. As such, proposed 6.5 ft track raise will require grading and track modification for a total of 6.0 miles both north and south of UPRR Bridge 165.89. Table 3 shows the existing infrastructure that will be impacted as a result of the 6.5 ft track raise. Sheet 2 shows the required grading and track modification required for the 6.5 ft track raise.

Table 3: Summary of Impacted UPRR Infrastructure for Alternative 4 (6.5' Track Raise)

UPRR Mile Post (MP)	Structure	Action
162.94	At-Grade Crossing (Cornelius Ave)	Replace Crossing
163.02	24-inch CMP Culvert	Replace Culvert
163.04	24-inch CMP Culvert	Replace Culvert
163.21	24-inch CMP Culvert	Replace Culvert
163.38	24-inch CMP Culvert	Replace Culvert
163.55	24-inch CMP Culvert	Replace Culvert
163.63	24-inch CMP Culvert	Replace Culvert
163.86	24-inch CMP Culvert	Replace Culvert
164.34	92-ft long TST Bridge	Replace Bridge
164.65	72-inch CMP Culvert	Replace Culvert
164.91	48-inch CMP Culvert	Replace Culvert
164.96	At-Grade Crossing (Private)	Replace Crossing
165.16	107-ft long TST Bridge	Replace Bridge
165.50	20-ft long RCS Bridge (Overpass Rio Oso Road)	Replace Bridge
165.78	At-Grade Crossing (Levee Road)	Replace Crossing
165.86	At-Grade Crossing (Levee Road)	Replace Crossing
166.13	At-Grade Crossing (Levee Road)	Replace Crossing
166.20	1,360-ft long Bridge	Replace Bridge
166.21	At-Grade Crossing (Levee Road)	Replace Crossing

Therefore, the proposed 6.5' track raise will impact 6.0 miles of track, 6 at-grade crossings, 4 bridges, 9 culverts, require additional ballast, earth material, rail and cost approximately 25 Million dollars. Due to the increased complexity of upgrading the existing infrastructure and cost to raise the track 6.5', this is not a practicable alternative.

Velocities

Based on the hydraulic analysis along Yankee Slough, the existing 100-year velocity (V_{100}) at UPRR Bridge 165.89 is 0.62 ft/s. The proposed Alternative 3, 12-span, 360' long concrete bridge and 7" track raise results in a V_{100} of 0.60 ft/s, a decrease of 0.02 compared to existing

condition. The proposed upstream and downstream channel velocities are equal to the existing condition, as well as the natural condition. The proposed Alternative 4, 12-span, 360' long concrete bridge and 6.5' track raise results in a V_{100} of 0.49 ft/s, a decrease of 0.13, compared to existing condition. It should be noted that velocities along Yankee Slough are low due to the backwater effects of the Bear River during the 100-year event.

A summary of the bridge and channel velocities for the natural, existing and proposed conditions are shown in Table 4.

Table 4: Summary of Computed Bridge and Channel Velocities along Yankee Slough

Cross Section Station	Natural Condition (ft/s)	Existing Condition (ft/s)	Proposed 7" TR (ft/s)	Δ Proposed 7" TR - Existing	Proposed 6.5 TR (ft/s)	Δ Proposed 6.5' TR - Existing
HEC-RAS STA 0.810*	0.52	0.52	0.52	0.00	0.52	0.00
HEC-RAS STA 0.776*	0.47	0.47	0.47	0.00	0.47	0.00
HEC-RAS STA 0.772*	0.50	0.50	0.50	0.00	0.50	0.00
UPRR Bridge STA 0.772*	N/A	0.62	0.60	-0.02	0.49	-0.13
HEC-RAS STA 0.767*	0.50	0.50	0.50	0.00	0.50	0.00
HEC-RAS STA 0.763*	0.49	0.49	0.49	0.00	0.49	0.00
HEC-RAS STA 0.710*	1.04	1.04	1.04	0.00	1.04	0.00

*Cross section numbers correspond to section numbers in the HEC-RAS model, which also correspond to the stream distance in miles upstream of Yankee Slough's mouth.

The south levee, immediately upstream of UPRR Bridge 165.89 has been identified by the U.S. Army Corps of Engineers as a levee critical site, according to the 2010-2011 inspection report. Based on the hydraulic analysis, the proposed 12-span, 360' long concrete bridge and 7" track raise results in a 0.02 ft/s decrease in the 100-year velocity, slightly reducing the risk of erosion in the vicinity of UPRR Bridge 165.89.

Debris

UPRR's preferred bridge replacement option consists of 12 spans compared with the existing bridge's 24 spans. Moreover, as stated above, UPRR's preferred bridge results in a 3% increase in opening area compared to the existing bridge. Due to fewer bents within UPRR's

preferred bridge opening and increased opening area, the risk of trash, trees and other debris accumulating along the upstream face of the bridge will be reduced under the proposed 12-span, 360' long concrete bridge and 7" track raise alternative.

Summary

In summary, replacing the existing 24-Span, 360-ft long, Timber Stringer Trestle - Ballast Deck bridge with a new 12-span, 360-ft long, Prestressed Concrete Box Girder bridge with the same low chord elevation (7" track raise) as the existing bridge results in a no-rise in the 100-year WSE (bank full capacity) at UPRR Bridge 165.89 over Yankee Slough. Therefore, there is no impact to the levee or property owners upstream (or downstream for that matter) of the track.

UPRR's preferred bridge opening area is increased 3% and the bridge velocity is decreased 0.02 ft/s, compared to the existing condition. In addition, due to 12 fewer bents within the bridge opening and increased opening area, the risk of trash, trees and other debris accumulating along the upstream face of the bridge will be reduced. Overall, the proposed 12-span, 360-ft long concrete bridge with a 7" track raise, is an improvement over the existing condition.

The 6.5 ft track raise alternative does not significantly improve drainage capacity or improve the risk of levee protection simply because of the fact that levee system's drainage capacity is up to the 100-year flood event and greater than the 100-year flood will spill over the levee and does not reach the bridge. It is noted that due to the increased complexity of modifying the existing infrastructure and associated exorbitant cost of raising the track 6.5' to meet the freeboard requirement, this alternative is not practicable. Since UPRR's preferred alternative does not cause any additional risk to the levee compared to the existing condition the merit of RD 1001 requirement must be in the context of addressing the regional flooding issues along the adjacent levee system.

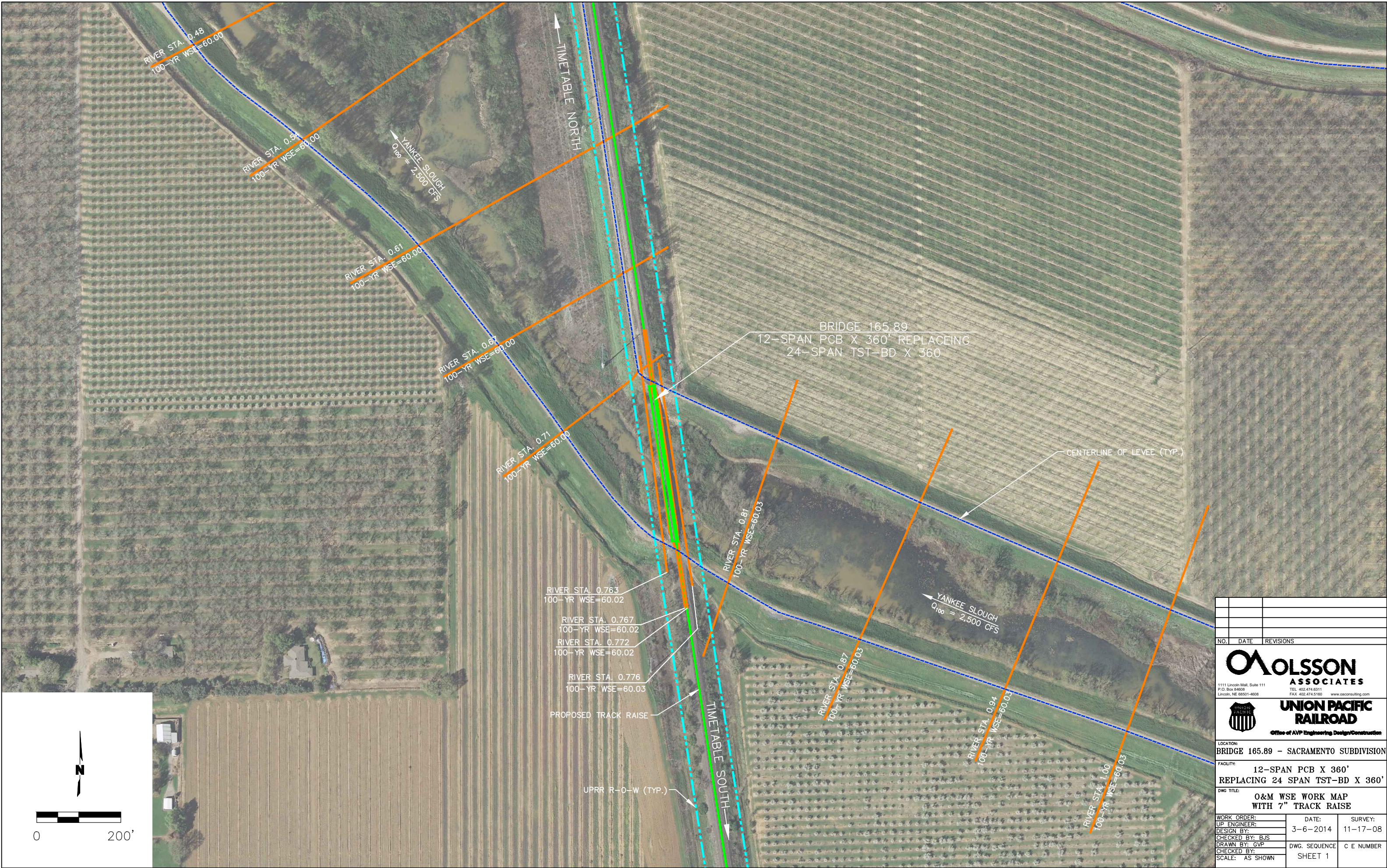
Finally, since under UPRR's preferred alternative the proposed low chord (Elev. 57.48) will be equal to the existing low chord (Elev. 57.48), the proposed bridge is in compliance with California Code of Regulations Section 128; (a); (16) regarding the replacement railroad bridge must have the soffit members no lower than those of the replacement bridge. According to Section 128; (a); (16) there are no requirements to have a specified amount of freeboard over the design floodplain for railroad bridges.

If UPRR's preferred bridge replacement option that includes matching the existing low chord elevation and improving the existing condition is not acceptable to CVFPB and RD 1001, UPRR will forego the bridge replacement project.

If you have any questions or need additional information, please advise.

Encl. (Sheets 1 – 2; UPRR Construction Drawings)

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NO.	DATE	REVISIONS

MOLSSON ASSOCIATES
1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608
TEL: 402.474.6311
FAX: 402.474.5180
www.molsson.com

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION: BRIDGE 165.89 - SACRAMENTO SUBDIVISION

FACILITY: 12-SPAN PCB X 360'
REPLACING 24 SPAN TST-BD X 360'

DWG TITLE: O&M WSE WORK MAP
WITH 7" TRACK RAISE

WORK ORDER:	DATE:	SURVEY:
UP ENGINEER:	3-6-2014	11-17-08
DESIGN BY:		
CHECKED BY: BJS		
DRAWN BY: CVP		
CHECKED BY:	DWG. SEQUENCE	C E NUMBER
SCALE: AS SHOWN	SHEET 1	



NO.	DATE	REVISIONS

1111 Lincoln Mall, Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608

TEL 402.474.6311
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www.olsonconsulting.com

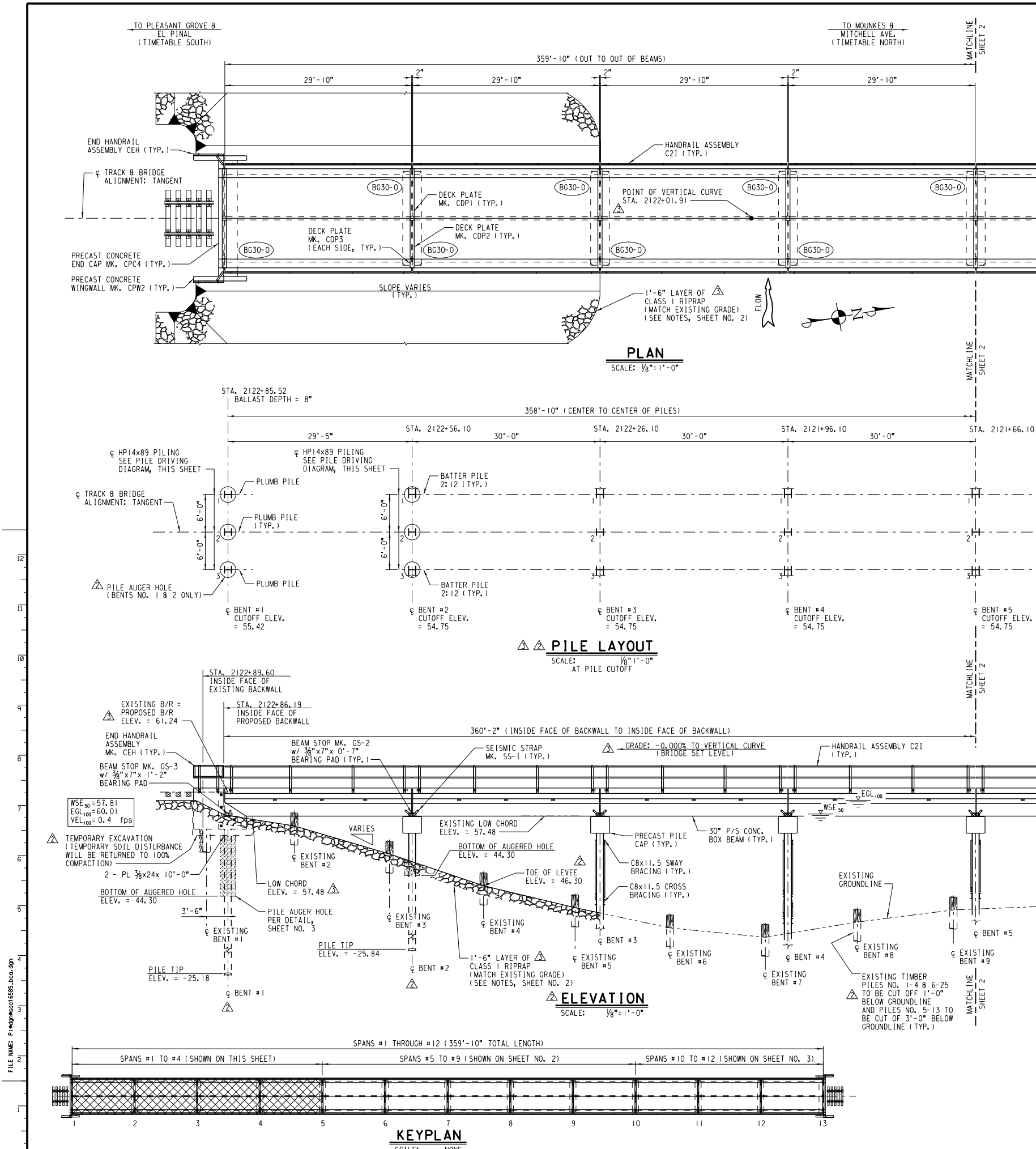
Office of AVP Engineering Design/Construction

LOCATION:
BRIDGE 165.89 - SACRAMENTO SUBDIVISION

FACILITY:
12-SPAN PCB X 360'
REPLACING 24 SPAN TST-BD X 360'

DWG TITLE:
PROPOSED 6.5' TRACK RAISE
GRADING LIMITS

WORK ORDER:	DATE:	SURVEY:
UP ENGINEER:	3-6-2014	11-17-08
DESIGN BY:	DWG. SEQUENCE	C E NUMBER
CHECKED BY: BJS	SHEET 2	
DRAWN BY: CVP		
CHECKED BY:		
SCALE: AS SHOWN		

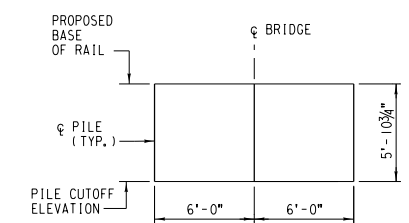


BILL OF MATERIAL				
REQ'D	UNIT	DESCRIPTION	STORE ITEM NO	ORDERED BY
24	EA.	30" x 29'-10" PRESTRESSED CONCRETE BOX BEAM MK. BG30-0, TYPE 1 w/ SLOPED CURB. (REF. 3)	511-7828	MANAGER TRACK PROJECT
2	EA.	PRECAST CONCRETE END CAP MK. CPC4 FOR 30" CONCRETE BOX BEAM (REF. 4)	511-0035	
4	EA.	PRECAST CONCRETE WINGWALL MK. CPW2 FOR 30" CONCRETE BOX BEAM (REF. 4)	511-0036	
10	EA.	15'-0" PRECAST CONCRETE PILE CAP FOR USE WITH CAPMASTER w/ BEARING PADS FOR BOX BEAMS (REF. 5 AND 6 AND DETAILS, SHEET NO. 3)	511-0352	
78	EA.	HP14x89x40' STEEL PILE (ASTM A572, PLAIN)	510-7557	
39	EA.	PILE SPLICER FOR HP14x89 STEEL PILE	510-8065	
39	EA.	PILE POINTS FOR PILE SPLICER FOR HP14x89 STEEL PILE	510-8063	
42	EA.	C8x11.5 x 20'-0" BRACE (ASTM A572, PLAIN) (FIELD CUT TO LENGTH)	247-6367	
22	EA.	BEAM STOP MK. GS-2 (REF. 7)	510-0595	
4	EA.	BEAM STOP MK. GS-3 (REF. 7)	510-0596	
24	EA.	HANDRAIL ASSEMBLY C21 FOR 29'-10" CONCRETE INTERIOR SPAN, (REF. 7)	510-0472	MANAGER BRIDGE CONST.
4	EA.	END HANDRAIL ASSEMBLY CEH FOR CONCRETE SPAN (REF. 6)	513-3020	
13	EA.	DECK PLATE MK. CDP1, GALVANIZED (REF. 7)	510-0590	
13	EA.	DECK PLATE MK. CDP2, GALVANIZED (REF. 7)	510-0591	
26	EA.	DECK PLATE MK. CDP3, GALVANIZED (REF. 7)	510-0592	
44	EA.	3/8" x 7" x 0'-7" ELASTOMERIC BEARING PAD	510-3635	
4	EA.	3/8" x 7" x 1'-2" ELASTOMERIC BEARING PAD	510-3637	
4	EA.	PL3/8x24x 10'-0" (A36, PLAIN)	510-7650	
44	EA.	SEISMIC STRAP MK. SS-1 (PER DETAIL, REF. 6)	510-0601	
4	EA.	SEISMIC STRAP MK. SS-EB (PER DETAIL, REF. 6)	510-0602	
110	EA.	1/2"x28" x 6'-4" PREMOULDED EXPANSION JOINT FILLER PER ASTM D1751	511-8213	MANAGER BRIDGE CONST.
2	EA.	BRIDGE MARKER SIGN PER ENGINEERING STANDARDS DRAWING NO. 0507	P00-2616	
2	EA.	PRIVATE PROPERTY / NO TRESPASSING SIGN	393-3651	
2	EA.	9-FT STEEL MOUNTING POST	393-7510	
2	EA.	SIGN MOUNTING HARDWARE KIT	393-7314	
4	EA.	HP14x73x40'-0" STEEL PILING (A572, PLAIN)	516-1004	
24	EA.	PL1/2"x7"x4'-0" STIFFENER PLATES	514-3032	
410	TON	RIPRAP, CLASS 1	562-2764	
1	LOT	4000 PSI CONCRETE FOR PILE SOCKETS (BENTS NO. 1, 2, 12 & 13)		
1	LOT	PL 400 HEAVY DUTY CONSTRUCTION ADHESIVE		
17	CU. YD.	WELL-GRADED 1 1/2" MINUS CRUSHED ROCK		
30	CU. YD.	FILL MATERIAL		

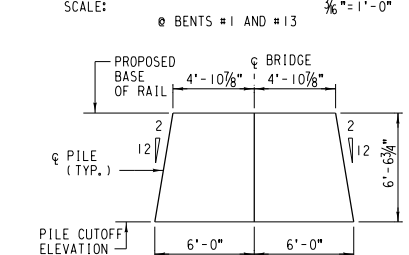
EST. WT. OF STEEL PILING = 277,680 LB.
STEEL SWAY & CROSS BRACING = 9,660 LB.
MISCELLANEOUS STEEL (NOT INCL. BOLTS) = 25,451 LB.

NOTE:
THE NUMBER OF PILE CAPS BEING ORDERED HAS CHANGED. ONE CAP WILL BE SHIPPED SEPARATELY TO THE SITE w/ THE CAPMASTER DEVICE.

DRAWING SCHEDULE				
THIS SET	SHEET NO.	DESCRIPTION		
	1	GENERAL ARRANGEMENT (SHEET 1 OF 3) AND BILL OF MATERIAL		
	2	GENERAL ARRANGEMENT (SHEET 2 OF 3) AND CONSTRUCTION NOTES		
	3	GENERAL ARRANGEMENT (SHEET 3 OF 3) AND PILE CAP MODIFICATIONS		
	4	LONGITUDINAL BRACING DETAILS		
REF.	5	TOP OF RAIL PROFILE		
	NO.	DWG. NO.	SHEET NO.	REV. NO.
	1	530000	A1-A7	A
	2	530000	B1-B4	A
	3	500000	BG1, BG2	F
	4	501000	A1	-
	5	501000	C1, C2	-
	6	531010	I	-
	7	502000	I-4	A
REF.	DESCRIPTION			
	BOX AND SLAB BEAM, CONSTRUCTION PLANS			
	30" BOX BEAM, CONSTRUCTION DETAILS			
	30" DOUBLE BOX BEAM, FABRICATION PLANS			
	PRECAST END CAP FOR 30" BOX BEAM			
	PRECAST CONCRETE PILE CAP			
	PRECAST CONCRETE PILE CAP BEARING PADS			
	STEEL HARDWARE AND HANDRAIL ASSEMBLIES			



PILE DRIVING DIAGRAM
SCALE: 1/8"=1'-0"



PILE DRIVING DIAGRAM
SCALE: 1/8"=1'-0"

POSTCONSTRUCTION COMPLIANCE

Contractor or UPRR Manager in charge of construction to provide to the office of the Director Structures Design as-built drawings confirming that the project was constructed in compliance with the plans and indicating any construction variances.

SIGNED _____
In Charge of Construction Date _____

APPROVED *Steve Chaney*
FOR AVP ENGINEERING DESIGN/CONSTRUCTION DATE 8/2/11

EST. WT. OF PRECAST CONCRETE	
BEAM MK. BG30-0 = 49,500 LB. EA. (24.8 TON)	
END CAP MK. CPC4 = 24,500 LB. EA. (12.3 TON)	
WINGWALL MK. CPW2 = 4,900 LB. EA. (2.5 TON)	
15'-0" PILE CAP = 19,700 LB. EA. (9.9 TON)	

NO.	DATE	REVISIONS
3	02/18/14	RAIL RAISE
2	11/27/12	ADDED PILE AUGER HOLE DETAIL FOR BENTS NO. 1, 2, 12 & 13
1	04/26/12	PILE CAP CHANGED FOR USE OF CAPMASTER

UNION PACIFIC RAILROAD Office of AVP Engineering Design/Construction	
LOCATION: BRIDGE 165.85, 8.7 MILES NORTH OF PLEASANT GROVE, CA	
FACILITY: 12 SPAN PCB x 360' REPLACING 24 SPAN TST-BD x 360'	
DWG TITLE: GENERAL ARRANGEMENT (SHEET 1 OF 3) AND BILL OF MATERIAL	
PROJECT ID: 17214 WORK ORDER: 89582 DESIGN BY: SLG CHECKED BY: VLV DRAWN BY: KDM CHECKED BY: VLV SCALE: AS NOTED	UP ENGINEER: SLG LATITUDE: 38°57'57" N LONGITUDE: 121°32'01" W SHEET NO. C E NUMBER 1 of 5 118643

DESIGN NOTES

This structure was designed for Cooper E80 Live Load with 30" ballast and impact.

Design Pile Load: End Bent = 76 Ton
Interior Bent = 120 Ton

This plan is for 8" (min.) ballast under timber ties.

CONSTRUCTION NOTES

GENERAL:

Field verify all dimensions, stations and elevations prior to start of construction.

Contact the Union Pacific "Call Before You Dig" number 90 days (not less than 60 days) prior to proposed construction start date. Prior to construction, confirm that all necessary relocations have been completed. The CBVD number is: 1-800-336-9193.

Profile: No change in main line elevation.

Elevations based on drawing titled "BRIDGE 165.89 - SACRAMENTO SUBDIVISION - BRIDGE REPLACEMENT LOCATION SURVEY," prepared by Olsson Associates, dated 04/09/2009.

TBM: Temporary bench mark established with nail located in power pole north of Bridge 165.89, Sta. 2120+39.56, left 32.38' from centerline of track, Elev. = 49.37.

Stationing based on UPRR Right-of-Way and Track maps at the north face of south backwall of existing Bridge 165.85, Sta 2122+89.60.

Right of Way: 50' both sides of track centerline.

PILE DRIVING:

All numbered pile shall be driven to 112 ton capacity.

All piling to be installed at Bents No. 1, 2, 12 and 13 per the "Pile Auger Hole Detail" on Sheet No. 3.

If any numbered pile cannot be driven to this capacity the Structures Design Group of the Office of AVP Engineering Design/Construction must be notified.

Splice pile per standard drawing Plan No. 530000, Sheet No. A2. Pile splices shall be located a minimum of 15' below the proposed or existing ground surface, whichever is lower. After pile driving is complete, provide pile driving logs to the office of the Director Structures Design.

Estimated capacity of driven piles shall be calculated using the Modified ENR formula, with Factor of Safety of 5. Direct questions to the Structures Design Group, Office of AVP Engineering Design/Construction.

FIELD WELDING:

Welding must be accomplished with the SMAW or FCAW process.

Welding must be in compliance with the requirements specified in AWS D1.5-95, except $\frac{1}{16}$ in. fillet welds may be made with a single pass.

Welding electrodes must be E7018 for SMAW or E70T-1 or E70T-5 for FCAW.

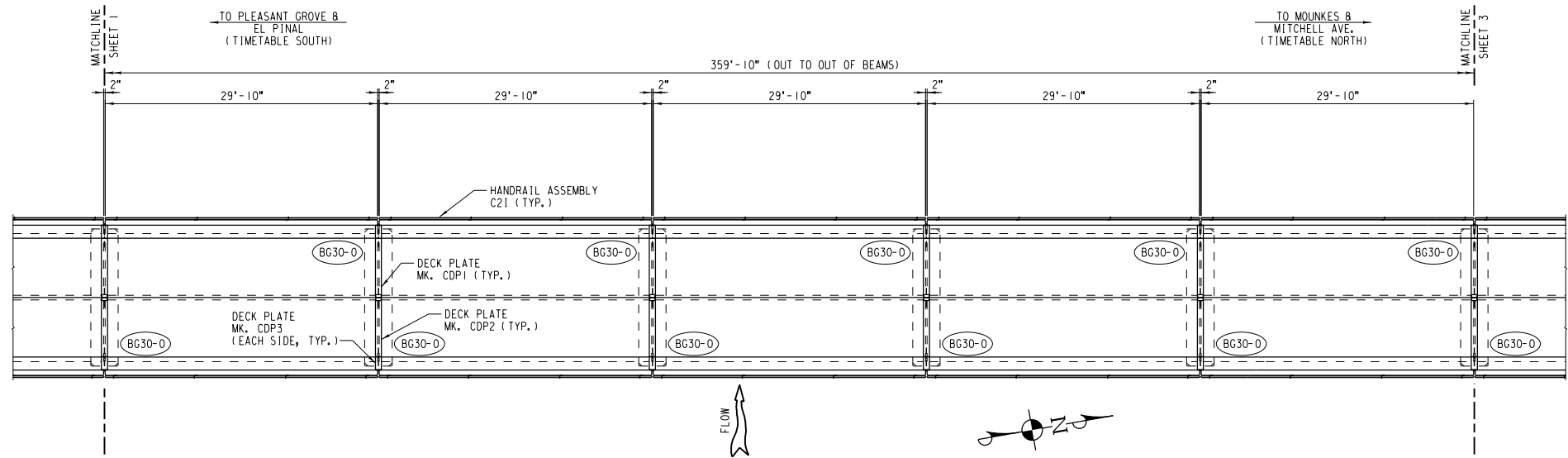
Welders must possess valid certification.

WELL-COMPACTED FILL:

Well-compacted fill shall be well graded granular soil free of any organic material, stones larger than 3 inches, frozen lumps, debris or excessive moisture. All compaction shall be determined using ASTM D1556 for field test and ASTM D1557 for moisture and density. Fill shall be compacted to 95% of maximum dry density as defined in ASTM D1557 (Modified Proctor). Fill shall be placed in layers not to exceed 12 inches.

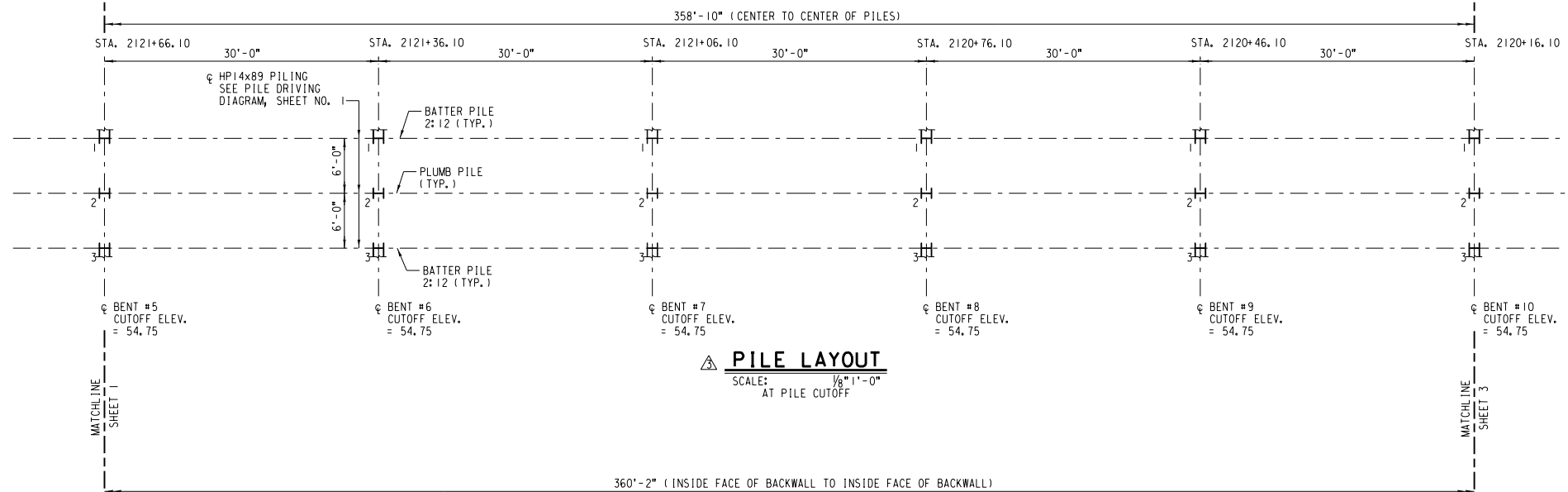
CLASS 1 RIPRAP:

Riprap shall be placed in such a manner as to avoid segregation of the various sizes of rock. Individual rocks shall be placed in tight contact with one another in such a way to produce the least amount of void spaces. Riprap shall be solid, unfractured rock or concrete, bulky in shape with sharp angular edges. Weight of individual rocks shall vary from a minimum of 50 lb. to a maximum of 200 lb. for Class 1, UPRR Item No. 562-2764.



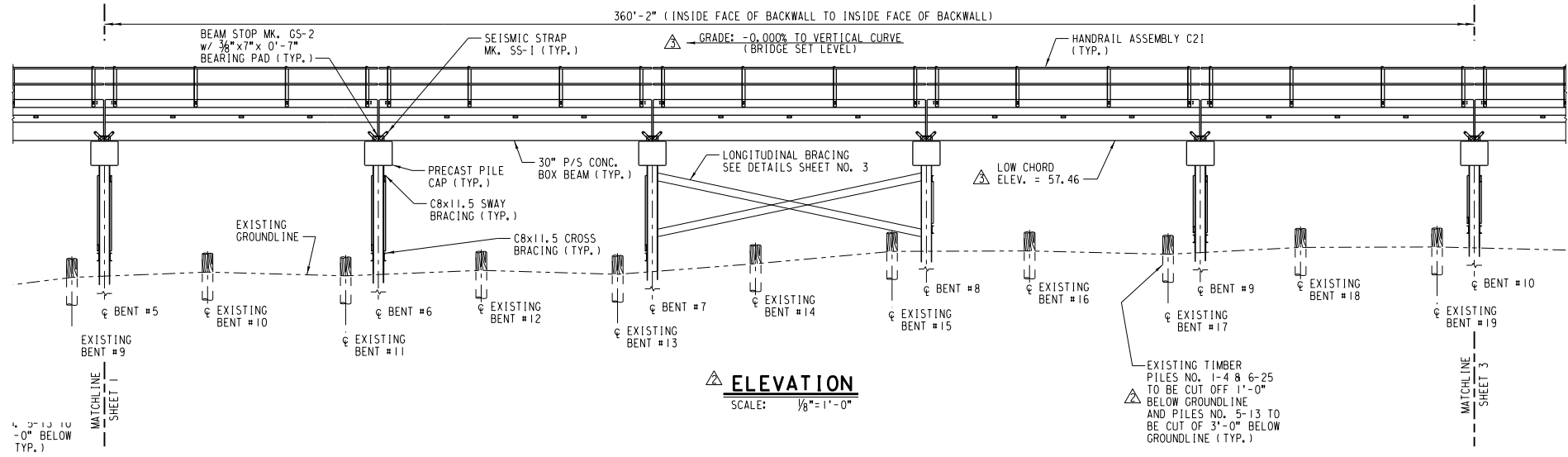
PLAN

SCALE: $\frac{1}{8}$ "=1'-0"



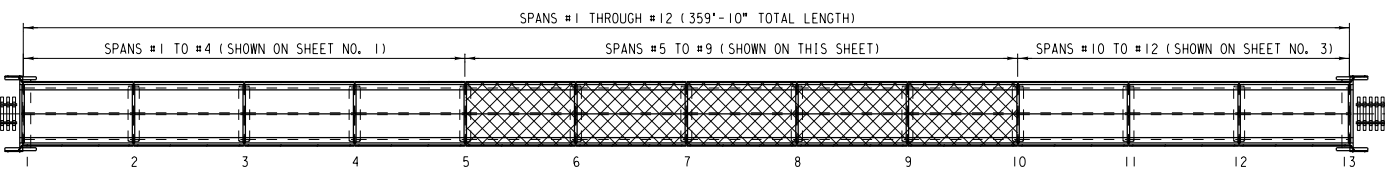
PILE LAYOUT

SCALE: $\frac{1}{8}$ "=1'-0"
AT PILE CUTOFF



ELEVATION

SCALE: $\frac{1}{8}$ "=1'-0"



KEYPLAN

SCALE: NONE

APPROVED

Steve Chaney

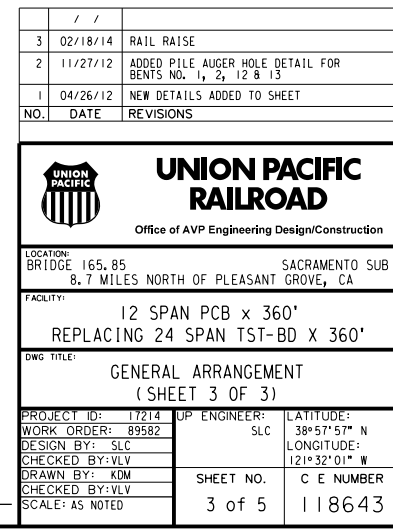
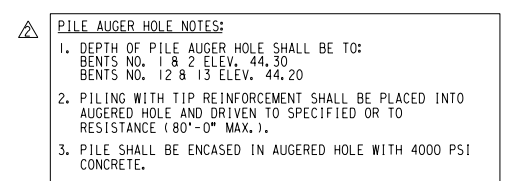
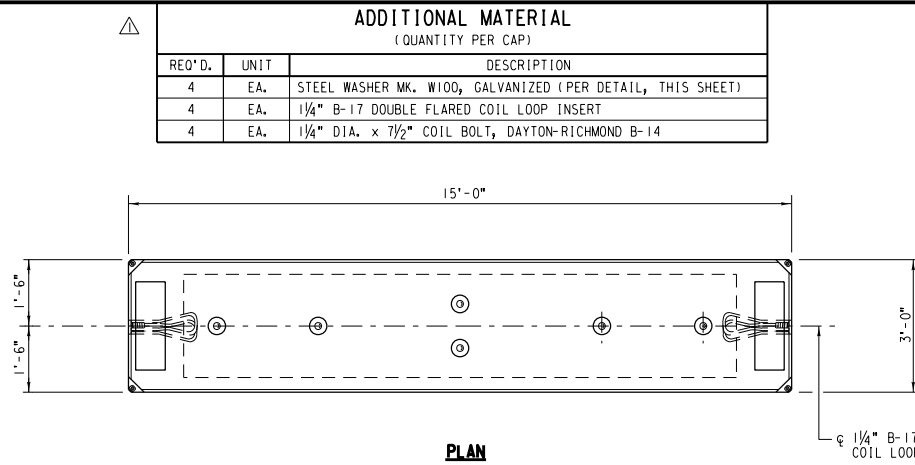
8/2/11

FOR AVP ENGINEERING DESIGN/CONSTRUCTION DATE

3	02/18/14	RAIL RAISE
2	11/27/12	ADDED PILE AUGER HOLE NOTE
NO.	DATE	REVISIONS
Office of AVP Engineering Design/Construction		
LOCATION: BRIDGE 165.85, SACRAMENTO SUB 8.7 MILES NORTH OF PLEASANT GROVE, CA		
FACILITY: 12 SPAN PCB x 360' REPLACING 24 SPAN TST-BD x 360'		
DWG TITLE: GENERAL ARRANGEMENT (SHEET 2 OF 3) AND CONSTRUCTION NOTES		
PROJECT ID: 17214	UP ENGINEER: SLC	LATITUDE: 38°57'57" N
WORK ORDER: 89582		LONGITUDE: 121°32'01" W
DESIGN BY: SLC		
CHECKED BY: VLV		
DRAWN BY: KDM	SHEET NO. 2 of 5	C E NUMBER 118643
CHECKED BY: VLV		
SCALE: AS NOTED		

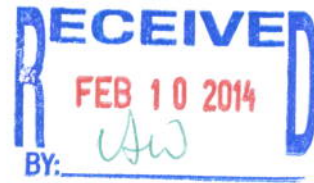
REDUCED PRINT - DO NOT SCALE - REDUCED PRINT

PLOTTED: 2/20/2014 8:37:31 AM



February 10, 2014

Richard P. Adams
917 4th Avenue
Rio Oso, California 95674
Cell; (916)710-1675
Home; (530)633-4926



Central Valley Flood Protection Board
3310 El Camino Ave., Rm 151
Sacramento, California 95821

Subject; PROTEST of application #18906 BD concerning the Proposed replacement of Timber Stringer Trestle Ballast Deck Bridge #165.89 by Union Pacific Railroad Company.

To whom it may concern;

The reason for the objection, and how it would impact me, is that I live in the immediate area of the proposed project, as do a large number of other citizens that are part of the South Sutter Water District 1001. The project outlined does not meet 100 year flood protection requirements outlined by existing Federal and State guidelines and, in fact, would impede any improvements that Sutter County or Water District 1001 would deem necessary to bring the levee up to aforementioned standards.

In conclusion; Citizens, such as myself, realize that procedures are in place to facilitate infrastructure improvements and repairs. That being said, the realization that a trusted local resource, Water District 1001, was not officially informed of the project by the State of California, or the contractor in charge of the project indicates, at best, a modicum lack of due diligence. This project has the potential to affect some 38,000 citizen of Sutter County and as such it seems prudent, to me, that local established agencies should be informed.

Thank You,

A handwritten signature in blue ink, appearing to read "R. P. Adams", written over a horizontal line.

Richard P. Adams

Maxine Borow
230 Oakhill Way
Auburn, CA 95603

February 6, 2014

Central Valley Flood Protection Board
3310 El Camino Ave., Rm 151
Sacramento, CA 95821

RE: PROTEST – Application #18906 BD

Dear Ms. Moricz;

I am an owner of Taresh Farms, Inc. along with my brother John Taresh who manages the day to day operations of the farm. Our farm is located in Rio Oso, California where I grew up and remain involved in the farm operation. Therefore, I am writing to you to protest the replacement of the Rail Road Trestle Bridge 165.89 Sacramento Subdivision over Yankee Sough without raising the level of the structure where it intersects the levee. This intersection is adjacent to our farm property and family home.

It is my understanding that the current level of the Trestle does not meet current elevation standards for flood control in the area. The Engineer for Reclamation District 1001 reviewed the plans for the replacement and advised community members of the deficiency. This deficiency puts the whole community at risk of flooding.

Many years ago, my father, Richard Taresh and several of the local community members had to sand bag the levee at this location due to the threat of rising flood waters in the slough and potential breach of the levee. If the slough were to flood and breach the levee, the potential damage to homes and local farm businesses would be devastating and costly.

Additionally, many residents in this area have purchased flood insurance and may have been required to do so. The deficiency in the levee could also be a potential impediment to coverage in case of flood damage. This could lead to lawsuits and extensive delays for local farms and residents to recover and rebuild.

Therefore, I am requesting that the Central Valley Flood Protection Board not grant approval of the construction project without revision to meet flood control standards.

Thank you for your consideration and help in this matter.

Sincerely,



Maxine Borow
Taresh Farms, Inc.

Elizabeth Nelson
4615 Bear River Drive
Rio Oso, CA 95674

530-633-2324 FAX 530-633-2650

February 6, 2014

To Central Valley Flood Protection Board
3310 El Camino Ave., Room 151
Sacramento, CA 95821 FAX 916-574-0682

Subject: PROTEST of Application # 18906 BD

Dear Ms. Moricz:

I am a Rio Oso resident concerned about local flood control. This letter is in protest to the proposed railroad bridge replacement project located on the left bank of Yankee Slough at River Mile 0.8 and is in Reclamation District 1001.

The proposal should include a provision to raise and strengthen the levee at both ends of the replaced bridge. Thank you for your consideration.

Sincerely yours,
Elizabeth Nelson

Eric Nelson
4615 Bear River Drive
Bear River drive, Rio Oso, CA. 95674

Central Valley Flood Protection Board
3310 El Camino Ave
Room 151
Sacramento, Ca. 95821

Re application number 18906 BD

Dear Sir or Madam

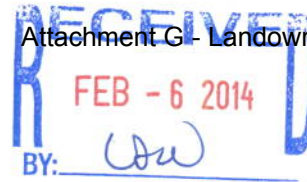
I am enraged with Union Pacific Railroad Company's current plan, it does not include any levee improvement to the Yankee slough levee.

Additionally the proposed elevation of the plan is not sufficient and must be raised. Please mandate that the Union Pacific Railroad Company comply with additional flood safety requirements that we the locals must adhere to and raise the proposed elevation.

Sincerely,



Eric Nelson



February 2, 2014

I'm writing in protest to application #18906D , the proposed new trestle over Yankee Slough, in Sutter County.

I have lived in this area for 60 years and I've seen the water come up to dangerous levels in Yankee Slough many times. This high water has carried debris that builds up on the existing low trestle pushing on the structure, and causing water eddies that wear away at the levee in this same spot.

The new trestle is designed to be *lower* ! This causes me great concern for the future safety of this community . The present drought in California gives a false sense of safety, in regards to the dangers of high water happening again. But it's a terrible mistake to design a lower trestle for this spot, for it would surely cause more costly damage in the future.

I believe its in the best interest of everyone in this area, and the Central Valley Flood Protection Board to design a new trestle that is *higher* than the existing one not lower.

Please take a serious second look at this project and design the new trestle higher.

Thank you .

Sincerely ,

A handwritten signature in blue ink that reads "Melinda Gallagher". The signature is fluid and cursive, with the first name "Melinda" and the last name "Gallagher" clearly distinguishable.

Melinda Gallagher
1444 Pacific Ave
Rio Oso, CA 95674

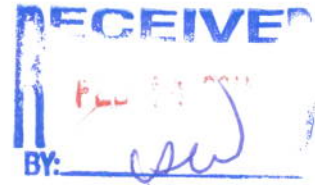
(530) 574-0442

Manuel Kafkares

1830 Berry Rd

Rio Oso Ca 95674

530-633-0476



February 11, 2014

Central Valley Flood Protection Board,

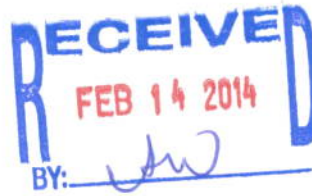
This letter is to inform you of my protest of the planned project by Union Pacific Railroad on Yankee Slough in Sutter County. I am opposed to a lower trestle as it may interfere with water flow on a high water year, causing flooding to my property and that of my neighbors.

Manuel Kafkares

Laurence A. Marinel
2425 Rio Oso Road
Rio Oso, CA 95674
530-633-4709

February 8, 2014

Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821



RE: PROTEST - Application number 18906 BD

Dear Ms. Moricz,

The purpose of this letter is to protest Application # 18906 BD, proposed by Union Pacific Railroad Company.

Yankee Slough Levee elevation at the trestle crossing does not meet current flood control requirements. Replacing the trestle without raising the trestle elevation would hamper any future levee projects to improve flood protection within Reclamation District 1001. I am requesting the trestle project be revised to allow any future levee improvement projects to be accomplished without requiring a change in the new railroad trestle location or elevation.

This project, as currently planned, would delay any future efforts to bring the Yankee Slough Levee into compliance with flood control standards. Any project that would impact the ability to make improvements to the Yankee Slough Levee directly impact flood protection in my community. Additionally, delaying or stopping levee improvements will adversely impact many residents flood insurance costs.

Therefore, I am requesting the Central Valley Flood Protection Board to deny approval of the trestle replacement project, until a revision to increase the trestle elevation is made.

Thank you.

Sincerely

Laurence A. Marinel

cc: Reclamation District 1001

R. Donald Norene
600 Swanson Road
Rio Oso, CA 95674
530-633-2970

February 3, 2014

Central Valley Flood Protection Board
3310 El Camino Avenue
Room 151
Sacramento, CA 95821

Re: Application number: 18906 BD

Dear Sir or Madam:

I am very concerned that the railroad bridge replacement does not include any levee improvement on the Yankee Slough. While the replacement of the wooden trestle will reduce resistance to water flow the project needs to strengthen the levees on the north and south side of Yankee Slough.

Water running over the top of the levee at the railroad track crossing of the levee has posed a problem in past flood events. The property that I own on the north side of Yankee Slough and on the south side could be impacted by flood waters. We are already required to construct an elevated pad in this area to build any structure. Union Pacific Railroad Company needs to join in efforts to improve the levee safety for Reclamation District 1001 on the Yankee Slough.

Sincerely,

A handwritten signature in dark ink, appearing to read 'R. Donald Norene', with a long horizontal flourish extending to the right.

R. Donald Norene

Central Valley Flood Protection Board

3310 El Camino Ave. Rm.151

Sacramento, CA 95821

Subject: PROTEST

With concerns to the letter dated January 24, 2014 (enclosed) in reference to the Replacement of the existing Timber Stringer Trestle (TST-BD) Bridge 165, 89 over Yankee Slough. As a Rio Oso community resident I have great concerns with the application from Union Pacific Railroad Company regarding the replacement of the existing trestle.

In past floods, it was necessary to sand bag this area due to the existing minimal height of the trestle, yet UP wants to lower it more rather than raise it. Considering that the community is protected and surrounded by Levee's, it is essential that more thought be given to strengthening the existing flood protection. Lowering the existing trestle only weakens the flood control measures, and only adds to the threat of flooding of the Bear River and Yankee Slough, which in turn threatens the local residents with more exposure and possibility to flooding.

It is requested that Union Pacific Railroad re-examine the replacement of the current trestle and consider the objections of the Rio Oso community, for it is the local Rio Oso resident who will suffer the possible loss of life and the destruction of property due to inadequate flood protection, which the lowering of the trestle in question would contribute to.

Union Pacific Railroad will continue to roll through Rio Oso, blasting their train horns in excess while the community will take years to recover from flooding.

Respectfully



W. R. Smale

2/4/2014

831 Greene st

Rio Oso, CA 95674

530-713-9609



February 6, 2014

Nancy Moricz, Senior Engineer, WR
Projects Section
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, California 95821

SUBJECT: PROTEST
Application No. 18906 BD

Dear Ms. Moricz:

We have been notified of the Union Pacific Railroad Company's proposed replacement of the existing railroad trestle over Yankee Slough near Highway 70 in Reclamation District 1001, Sutter County.

The information we have received is that the trestle would be built about three and one-half feet below the Federal Government's suggested flood control grade level for the levee in this area, therefore, the levee could never be improved and built up to the grade level suggested to provide this area with 100 year flood protection. This project is approximately .25 mile from our home.

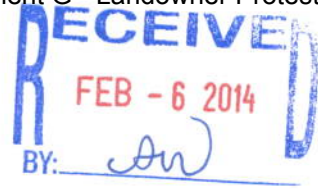
Based on the above concerns, we are protesting this project. Keith and Vera Smith, 644 4th Avenue, Rio Oso, CA 95674, (530) 633-4385.

Sincerely,

Keith C. Smith
Vera L. Smith
Keith & Vera Smith

cc: Sungho Lee

John R. Taresh
PO Box 5
Rio Oso, CA 95674
(530) 633-2554



February 1, 2014

Central Valley Flood Protection Board
3310 El Camino Ave., Rm 151
Sacramento, CA 95821

RE: PROTEST – Application # 18906 BD

Dear Ms. Moricz;

The purpose of this letter is to protest the replacement of the Rail Road Trestle Bridge 165.89 Sacramento Subdivision over Yankee Sough without raising the level of the structure where it intersects the levee.

The current level of the Trestle does not meet current elevation standards for flood control. The Engineer for Reclamation District 1001 reviewed the plans for the replacement and advised community members of the deficiency. This deficiency puts the whole community at risk for flooding.

Therefore, I am requesting that the Central Valley Flood Protection Board not grant approval of the construction project without revision to meet flood control standards.

Thank you for your consideration and help in this matter.

Sincerely,

A handwritten signature in black ink that appears to read "John R. Taresh". The signature is stylized with a large, sweeping flourish at the end.

John R. Taresh



Kuldip Thiara
1130 4th Ave.
Rio Oso, CA 95674
(530) 633-8294

February 6, 2014

Central Valley Flood Protection Board
3310 El Camino Ave., RM 151
Sacramento, CA 95821

RE: PROTEST – Application #18906 BD

Dear Ms. Moriez:

The purpose of this letter is to protest the replacement of the Rail Road Trestle Bridge 165.89 Sacramento Subdivision over Yankee Sough without raising the level of the structure where it intersects the levee.

The current level of the Trestle does not meet current elevation standards for flood control. The Engineer for Reclamation District 1001 reviewed the plans for the replacement and advised community members of the deficiency. This deficiency puts the whole community at risk for flooding.

Therefore, I am requesting that the Central Valley Flood Protection Board not grant approval of the construction project without revision to meet flood control standards.

Thank you for your consideration and help in this matter.

Sincerely,

Kuldip Thiara



DeVALENTINE FARMS, INC. • 2890 BEAR RIVER DRIVE • RIO OSO, CA 95674 • SHOP (530) 633-0617 • FAX (530) 633-0618

February 2, 2014

Central Valley Flood Protection Board
3310 El Camino Ave., Room 151
Sacramento, CA 95821

RE: PROTEST. Replacement of the existing Railroad Trestle at Bridge 165.89, Sacramento subdivision over the Yankee Slough with a lower structure.

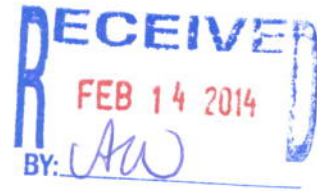
Dear Board Members:

I farm and own property that is contiguous with the above Trestle and the Yankee Slough and Bear River. I am adamantly opposed to any lowering of the existing Trestle as it would increase the risk of flooding of my property and much of the Rio Oso community. I was required to remove orchard (under threat of eminent domain) from an adjacent part of the Yankee slough and Bear River in the same water channel by Three Rivers Levee Improvement Authority to increase hydrologic flow to avoid flooding. The railroad should be held to at least the same standard as a private land owner regarding the construction of any structure that may adversely affect flood control.

Sincerely,

Steven DeValentine
President
DeValentine Farms, Inc.
(530) 633-0617
stevendevalentine@yahoo.com

William L. Williams, Jr.
Candice J. Colt-Williams
2439 Rio Oso Road
Rio Oso, CA 95674
530-633-2456



2/10/14

Central Valley Flood Protection Board
3310 El Camino Ave., Rm. 151
Sacramento, CA 95821

RE: PROTEST-Application No. 18906, Union Pacific Railroad for
Replacement of Existing 24-span, 360-ft Long, Timber Trestle
Ballast Deck (TST-BD) Bridge 165.89, Sacramento Subdivision

To the Flood Protection Board:

William L. Williams, Jr. and Candice J. Colt-Williams, who reside at the above address and phone number, protest and object to the above-described project. The basis for our objection is that the design of the project in terms of the height of the replacement trestle does not adequately address the flood danger to our home and property. Our area has already been designated as a higher risk flood zone by FEMA. Aside from increasing the danger of a flooding event, this project could adversely affect our flood insurance rates and the value of our property. We strongly object to any design that does not provide the maximum in flood prevention.

Please send a copy of the staff report on this project and any evidence that will be submitted to the Board. We also request to be notified of any hearing on this application. If there is anything further necessary to place our protest before the Board, please notify us immediately.

Sincerely,

A blue ink signature of William L. Williams, Jr., written in a cursive style.

William L. Williams, Jr.

A red ink signature of Candice J. Colt-Williams, written in a cursive style.

Candice J. Colt-Williams



1160 Civic Center Blvd.
Yuba City, CA 95993

BOARD OF SUPERVISORS COUNTY OF SUTTER

(530) 822-7106
FAX: (530) 822-7103

EP 18906

February 26, 2014

Sungho Lee, Ph.D., Engineer, W.R.
STATE OF CALIFORNIA
Central Valley Flood Protection Board
3310 El Camino Ave., Room 151
Sacramento, CA 95821

RE: Bridge 165.89: Sacramento (Bear River / Yankee Slough) – Sutter County

Dear Dr. Lee:

On behalf of the residents and property owners in the County of Sutter, we are writing to express our concerns regarding the proposed bridge replacement at the confluence of the Bear River and Yankee Slough. The referenced project proposes to replace an existing railroad bridge with a new bridge having the lowest chord at the same elevation as the existing bridge. At issue is the fact that the lowest chord of the existing bridge is at elevation 57.48 feet, while the Water Surface Elevation associated with a 100-year flow event (WSE_{100}) is at 60.01 feet. Thus, during a 100-year flow, the new bridge would encroach into the active channel by a depth of 2.53 feet.

The assertion made by the Union Pacific Railroad (UPRR) that the proposed bridge would have no effect on the WSE_{100} as compared to the existing bridge is correct. However, that is not the issue at hand. Under the National Flood Insurance Program (NFIP), reconstruction or substantial improvement of a structure requires building to current standards. Thus, neither the County of Sutter nor the County's property owners could replace an existing structure with an exact copy of the existing structure unless the replacement meets all current standards, including elevation above the Base Flood Elevation, or within a floodway, above the WSE_{100} . It is unthinkable to allow the UPRR to replace this existing bridge with another non-compliant bridge that will indisputably create a backwater condition for upstream properties and negatively affect the flow capacity of the Bear River and Yankee Slough. The hydraulic evaluations submitted by the UPRR only compare existing against proposed bridge conditions, not channel absent the existing encroachment against the proposed bridge condition.

Members of the Board

Ron Sullenger	District 1
Stanley Cleveland, Jr.	District 2
Larry Munger	District 3
Jim Whiteaker	District 4
James Gallagher	District 5

County Administrative Officer
James M. Arkens

Clerk of the Board
Donna M. Johnston

The State of California requires non-urban areas to provide 100-year flood protection. Issuing a permit to allow construction of a new bridge that impedes the flow of a river resulting in a backwater condition upstream is inconsistent with the spirit and intent of the State to protect its citizens against flood. The construction of a new bridge that intrudes into the active channel of a river and increases the WSE100 as opposed to a no-bridge condition also violates the provisions of the Code of Federal Regulations, 44 CFR 60.3(d)

Should you have any questions regarding our position or would like additional information, please contact Supervisor James Gallagher.

Sincerely,

A handwritten signature in blue ink, reading "Stanley Cleveland, Jr.", is positioned above the printed name.

Stanley Cleveland, Jr.
Chairman, Board of Supervisors

CC: Congressman Doug LaMalfa
Congressman John Garamendi

Members of the Board

Ron Sullenger	District 1
Stanley Cleveland, Jr.	District 2
Larry Munger	District 3
Jim Whiteaker	District 4
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Clerk of the Board
Donna M. Johnston